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ALBERTA NATURALIST

Volume 14, Number 3. September 1984.

The Grizzly Bear is one of the mammals associated with glaciers in the Canadian Rockies. See article pages 86-90.

Photo: Jim R. Salt

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Bush Fires, Beavers and Bulldozers

Fred Schutz

I live on the northwest quarter of section two, township forty-four, range four, west of the fifth meridian, more usually written, NW2 - 44 - 4 - W5. This is the quarter section that my father homesteaded in June, 1921. At that time it was on the very fringes of settlement, in bush country, on a tributary of the upper Blindman River. The soil was light clay, later given the designation grey-wooded. It was less fertile than the black soils around Rimbey, 29 km to the southeast.

The railroad had reached Rimbey two years before my father's arrival, and was under construction north of that town. With the prospect of a rail line up the valley, more and more settlers were taking up homesteads on the grey-wooded land. As it had done elsewhere, the advancement of settlement brought great changes to the land and to the landscape; changes that were far more drastic and damaging than they need have been. The farmsteads, the small fields, the fences, the improvements to roads and trails, even the few head of cattle and horses grazing on and off the holdings would have had only a gradual impact on a land that had so recently been virgin wilderness. It was not so much agriculture that transformed the region in a few short years from the tall mixed forests of the 1800s to the snags and stumps and second growth cover of the 1920s. It was fire, the great destroyer that exposed the horizons in the upper Blindman Valley.

Many an early settler looked at his 160 acres of tall trees and thick brush and stood intimidated by the thought of the uncountable hours of back-breaking work that lay ahead of him. An old family friend with an enquiring mind measured off four square rods (100 square metres) of his newly acquired homestead one morning, checked his pocket watch and went to work with grubhoe and axe. When he made his calculations that night after ten hours of toil, he concluded that he could have his homestead cleared in just under 200 years! There had to be some other way. Fire as a means of land clearing was unacceptable to this man, but to many of his neighbours, fire seemed a means worth trying, and many used it. Open up the country, men said, and make way for farms and people. One sweep of fire in the spring, when last summer's grass burned hotly, was merely a start. Repeated burns, spring after spring, were required to open up a piece of land for the plow, and even so, the homesteader usually found that there was still an enormous amount of manual labour involved. If the fire spread onto a neighbour's land, or onto unoccupied land, what matter. Its purpose

Adversely affected by changing farming methods, Sharp-tailed Grouse have become scarce in central Alberta during the past thirty years. Photo: Edgar T. Jones

was to destroy trees, expand the great wheat and cattle belts of the prairies. This attitude toward trees was still prevalent, although changing by the time my father arrived in 1921, and it has not entirely died out in the 1980s. "Poplar trees don't make you money," is a phrase still being heard.

Fire provided some short term benefits to the early homesteader, other than clearing his land of brush and trees. It provided him with dry firewood for fuel, and, in the tamarack swamps, with dry trees for fenceposts. On my farm there are still some tamarack fenceposts that have been holding up barbed wire since 1921. There are no better posts on the market today.

Fire also improved the bush pasture that was a part of the economy of homesteading. All cultivated land was needed to produce cash grain crops and winter feed for livestock. The vetch and peavine that came up in the first few years after a fire produced volumes of rich milk from even a mediocre milk cow.

It may never have occurred to those people that repeated burnings, spring after spring, might be turning the topsoil to ashes, leaving the land impoverished. Short term evaluation indicated that burned-off land, broken and cultivated, produced bumper crops for a few years. Yields soon dwindled however, and new fields had to be broken to maintain viable returns from the total operation. The whole process was not unlike the slash and burn techniques of third world agriculture. Not until the 1930s, with fire becoming less acceptable as a means of land clearing, did settlers and established farmers learn to build up their land with legumes, and to use other agricultural practices more suited to the grey-wooded soils. So during the 1930s fire became less a tool of agriculture and more a scourge to be feared by farmers. Fighting fire was an extra-curricular activity that every man and boy and some farm women took a turn at sooner or later.

Burned-over forest always has a look of desolation about it that may last for years. Fortunately, my father and Uncle Fred, who homesteaded adjacent quarters in that same year, 1921, were both photographers, and they have left a wealth of documentary evidence concerning the appearance of the area from 1921 on. The area for miles to the west of the two homesteads had been burned in previous decades. Along the mile of creek that bisected the two quarters some stands of huge balsam poplar had survived the fires, as had some spruce along the creek and in low, wet areas. Inexplicably, there were some stands of lodgepole pine that had escaped fire since the 1890s. Most burns were more recent, and the whole country had an open appearance that it would lose in the next two decades as young trees, nurtured by an existing root system, grew rapidly, stretching up as much as a metre per year for the first two years, and 30 to 60 cm per year after that. Tall snags sticking up through this poplar and willow cover, marred the scenery for years to come, and "downstuff", as the dead, fallen trees were called, laced the ground until my brother and I, as children, were able to make a game of walking completely across a quarter section without ever setting foot on the ground. Much of this wood was already beginning to rot by the 1920s and was incorporated into the soil as the land was cleared and broken in the years to follow.

Until the mid-1950s fires were a periodic worry in the west country, but settled agricultural areas were less vulnerable than in earlier decades. More manpower to fight a fire, more cattle to keep the grass down and a grid network of graded roads helped to keep runaway fires confined to smaller areas. Then, in the late 1940s, the beaver, once a threatend and strictly protected species, began to make a rapid comeback over its former territory, wildlands and farmlands alike. Ponds appeared on water courses that hadn't seen beaver for more than half a century. Beaver on a creek make excellent fire wardens.

The beaver ponds brought other benefits. They enriched large areas for wildlife habitat, and the wildlife was quick to respond. The numbers and variety of waterfowl, shorebirds, fur bearers and others multiplied throughout the area in which I had grown up. The Great Blue Heron,unknown to me as a boy, now hunted frogs and small fish on the margins of the beaver ponds. The Canada Goose, previously seen here only in the sky during migration, now occasionally landed in larger ponds. The Sora's ringing call became commonplace, and the Red-winged Blackbird became one of our commoner summer residents. Mink tracks marked the snow on the beaver dams in winter, and sometimes I would see fox tracks around the lodges.

In the late 1940's, beavers made a rapid comeback to central Alberta. Their dams transformed intermittent streams into a string of ponds where many forms of wildlife found refuge. Photo: Dick Dekker

I revelled in the outdoors during this period following the return of the beaver. There was so much to see, so much to learn, and my store of books on Alberta's wildlife began to grow. I had started with Banff naturalist Dan McCowan, and I had P.A. Taverner's "Birds of Canada." In 1948 I sent to the National Museum of Canada for "Mammals of the Eastern Rockies and Western Plains of Canada," by A.L. Rand. The price for this still valuable 240 page book was fifty cents! I also had the National Geographic books on birds and animals, so I had some good reference material to turn to. Also, in the 1940s I had begun to keep files of newspaper clippings on topics pertaining to wildlife, the environment and Alberta outdoors, and I read every published story and article by Red Deer author Kerry Wood.

I began to see that some of my old concepts and some of Albertans' old concepts concerning wilderness and wildlife were seriously flawed; that wilderness did not go on westward forever, and that we were foolishly wasting our wildlife resources right at home. For example, I came to a disagreement with the local Fish and Game Association, of which I was an active member, over their practice of offering a prize to the member who could destroy the greatest number

of Great Horned Owls in a season. The member who won that year had a count of over fifty!

Coming from a pioneer homestead family I played a considerable part in the process of cutting down trees to make fields for crops to grow on. However, I was set a good example in this operation by both my father and my uncle. Raised in the city of London where trees are not plentiful, they both loved the outdoor life, and I think that trees and wilderness were among the reasons they chose to come to Canada in the first place. In developing their homesteads they had shown an awareness of both the practical and aesthetic values of trees, and had left four rods (20 metres) of windbreak along most fencelines and between major fields, In addition, livestock had been fenced out of significant areas around the farmsteads.

As children, my brother and sister and I were taught reverence for the wildlife that lived or nested close by. This reverence did not extend, however, to those species that were considered pests; the Snowshoe Hares that ate our crops at all seasons, and the Meadow Voles that proliferated under the stooks in autumn, reducing the yield and cutting the strings on the bundles, making pickup difficult. Nor did it include the Goshawk which we called chicken hawk with good reason. And of course we made a few cents pocket money collecting the bounty on crow and magpie eggs and gopher tails. But there was a reasonable balance, and we all learned to enjoy the outdoors and its creatures and to take no life without good cause.

There have been many changes in the wildlife picture over the years, in addition to those brought about by the beaver. In the 1920s, despite the large tracts of burned-over land, generally considered good moose habitat, a moose sighting was a rarity, and talked of in the neighbourhood for days. Since the 1950s moose have seldom been far away, usually within a kilometre of the house. They commonly winter on my land. Elk (Wapiti) were quite unknown here until the late 1930s when the natural overflow from Banff National Park began to be seen this far north and east. They had been introduced to the Banff area from Yellowstone National Park in 1917 and in 1920. Yet we have found several old elk antlers on this farm, preserved in peat or in calcareous soil near a spring. These belonged to a different and probably larger race of elk that had been wiped out by hunting and hard winters in the 19th century. For the past quarter century elk or their tracks have been commonly seen on my land.

I saw my first White-tailed Deer about thirty years ago. Today they are more numerous than the Mule Deer ever were, while the latter have become rather scarce.

It was in 1948 that I first saw a raven, and for years we saw them only in winter. Now they may be seen in all months of the year, and there is some evidence that they nest not far away.

The Northern Timber Wolf was also quite unknown here in homestead days. Their tracks in the snow or in the mud of a beaver dam are not an unusual sight today, and occasionally an animal is glimpsed, at his peril, well within the farming area.

Some aspects of the wildlife picture that have changed drastically over the years concern migratory waterfowl and the Sharp-tailed Grouse. When I was a boy going to school, the duck migration, both spring and fall, was one of the wonders of nature. It was scarcely an exaggeration to say that they darkened the sky. I remember walking the 5 km to school in 1935, and in the hour that it took me, being able to see flocks of ducks in the sky every minute of that time. And they were flocks of hundreds and even thousands. They would settle at night on the fields of stooked wheat, and my father would send my brother an me up onto an eighty acre (32 hectare) field at sundown to patrol that field until dark and keep them from settling on our stooks. Their toll in bushels in a single night would be significant, were they allowed to settle. Not until the wheat was threshed and safely in the bin would we be free of this chore.

The Sharp-tailed Grouse, known to everyone in this area as prairie chicken, also took a heavy toll of the unthreshed wheat. It was more difficult to keep them off the stooks than it was the ducks, as they would begin feeding at daylight in flocks of hundreds, and if chased, would simply fly to another part of the field, eating until their crops were full. An estimated 4.5 kg of wheat would be taken from every stook in the field by threshing time – approximately one-eighth of the total yield. Today I am thrilled to see half a dozen sharptails in one flock. I normally see about that many in a single year, yet I note that there is a long open season on sharptails in all parts of the province, while the bag limit last fall was five per day.

In the meantime the beaver have become so numerous as to be considered a nuisance and a pest in farming areas. On my own farm they have repeatedly flooded hay meadows and made them inaccessible, and they have destroyed all the huge Balsam Poplar along the creek which I mentioned earlier. They have also killed by drowning, some stands of large spruce.

I learned at an early age to know the dangers of fire when my father had a horse fatally burned as he was plowing a fireguard to keep the fire from coming onto the farm. The second horse of the team, protected by the first from the advancing flames, recovered. We were always careful in later years when burning brush piles, to do it in safe weather; to not let the fire spread into areas that did not require burning, and to make sure that fire lingering in an old stump or in peat soil was put out. I can well remember my father's annoyance when less careful neighbours allowed fire into creek bottoms and onto road allowances, and sometimes onto our land.

As the concerns about fire ravaging the landscape abated, a new one arose. It seemed that there were still those people who thought that the prairie should be brought to the bush country, and now they had bulldozers. Bulldozers are almost as destructive of trees as fire once was.

Land clearing took a great jump with the coming of the oil boom in the early 1950s as crawler tractors with blades attached became quite common. Almost any homesteader, farmer or landowner could get a job in the oil patch in his off season, at wages unprecedented in his lifetime. A great many who did immediately put their money into their land, clearing more with a cat in one season than they had cleared in ten with axe, grubhoe and four-horse team. Often, with land still cheap, they acquired another quarter and broke it up.

I have long been troubled by the fact that there have never even been guidelines from the Department of Agriculture as to what kinds of land and how much in any township should be cleared for agriculture. I have watched in dismay as land I considered unarable, land that had at last recovered from the bush fires of the 1930s, has been laid bare by the bulldozer. Grey-wooded soil is particularly subject to erosion by water, and care should be taken in its clearing. I have seen slopes too steep to farm, draws that should have been left as water course, slough margins and fencelines that should have been left for wildlife habitat, all cleared of every tree, every bush. Operators of bulldozers seem to possess a strange kind of pride. They delight in seeing how close they can come to a fence, a roadway, or a stream bank, and not leave a tree standing. So the land owner and the cat skinner between them have a free hand. There are no regulations to say that trees of any age, any species, or of any commercial or aesthetic value are required to be left on any privately owned land. And clearing on public land, particularly on provincial grazing reserves and on private grazing leases, sets an extremely poor example, committing most of the errors mentioned above, and doing it too often on land that should not be cleared at all.

I have no doubts that the land clearing that has taken place in the central parts of Alberta over the past thirty years is having some effect on the climate, although this might be difficult to demonstrate. To date, the change may not be a serious one, but what of the future? Should we not be learning from the mistakes of other countries, other civilizations, other regions of the earth where remedial action is either too costly or too late?

This past spring I spent a few days in Mexico's Oaxaca Valley. At the turn of the century, I was told, this was a verdant, heavily forested valley, broad and beautiful, with an annual rainfall exceeding forty inches (100 cm). But the forests were commercially valuable and the land was in demand for agriculture. Today the forests are gone, the Oaxaca River is dry for much of the year and the average annual rainfall has dropped to less than twenty inches (50 cm). Drought and water shortages are real problems. Can it happen in the Blindman Valley? Why are we not trying to ensure that it doesn't? We should be spending the kind of money on research into climate change and control that we are so foolishly spending on clearing land for provincial grazing reserves.

I have seen great changes in this beautiful province in my lifetime. Many have been good, many have been exciting; some have been saddening and some have been alarming. I suspect that even greater changes will come about in the next sixty years. I know some will be good and exciting. I hope not too many of them are frightening.

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Vertebrate Fauna Associated with Glaciers in the Canadian Rockies

Jim R. Salt

Even for a naturalist experienced in travel on glaciers or icefields and glaciated peaks, it is often something of a surprise to come upon birds or mammals (or their remains) so far from "land" in these areas of permanent snow or ice. There is very little in biological literature about vertebrate fauna on glaciated areas in western North America. On the other hand, written and verbal accounts by mountaineers include many such observations, usually without giving much technical detail. It is clear from the climbing literature and from my own records that such occurrences cannot be regarded as merely rare or accidental.

In assembling these notes I have usually omitted dates; very few of the specimens found are recent, and not only the month but even the year of death is generally uncertain, due to the degree of deterioration of most.

In general, three sorts of snow-ice region are involved in these records. The lowest in elevation are the valley glaciers, which consist of melting core ice, often fairly level and unbroken except where there is a radical change in gradient of the glacier bed. This area of glaciers is known as the "ablation zone", or melt-zone. The higher parts of the same glaciers (in the Canadian Rockies, ca. 2800 m and above) rarely or never melt down to coarse permanent ice, and are called "accumulation zones". Their surface consists of firm compacted snow in summer. Finally, the higher peaks often have local areas

Seracs and ice walls in the icefall of a hanging glacier. Athabasca Andromeda Cirque, Jasper National Park.

Photo: Jim R. Salt

of "fern" snow or névé (pronounced "nayvay"), which is the permanent snow of the accumulation zone at high elevations, and is frequently the source of supply of glacier ice.

One of the most significant characteristics of the more extensive snow-ice areas is their effect upon local weather. Since they are directly associated with high peaks, they both "capture" and produce cloud and ground-fog (known to climbers as "white-out"), often very local but lasting for several days. Visibility is extremely poor in such conditions; it is impossible to distinguish visually between snow or ice and sky even at a short distance. Human beings commonly lose their way in a white-out, and may also experience disorientation. It is not surprising, then, that the flight of birds, either local or migratory, should be impeded by a period of white-out. Whether these weather conditions also disorient large mammals is not clear, but it seems unlikely that small mammals are affected by them.

Vertebrate fauna found in these regions may be classified as either live records or dead remains. It will be seen from the lists below that the species in these two groups are generally different, with the exception of some passerines and small mammals. Following are lists of species which I have recorded at least once, and usually many times, in association with glaciated areas. I have appended notes on some of these occurrences.

Live Records (Birds):
Canada Goose, *Branta canadensis*
California Gull, *Larus californicus*
Ring-billed Gull, *L. delawarensis*
White-tailed Ptarmigan, *Lagopus leucurus*
Common Raven, *Corvus corax*
Clark's Nutcracker, *Nucifraga columbiana*
American Robin, *Turdus migratorius*
Horned Lark, *Eremophila alpestris*
Water Pipit, *Anthus spinoletta*
White-crowned Sparrow, *Zonotrichia leucophrys*
Golden-crowned Sparrow, *Z. atricapilla*
Rosy Finch, *Leucosticte arctoa*
Snow Bunting, *Plectrophenax nivalis*

The avian species most frequently recorded alive, in my experience, are Rosy Finch, Horned Lark, Water Pipit, Raven and the gulls. It is commonplace to find small groups of Rosy Finches moving over glacier surfaces, gleaning insects or plant materials from the ice, particularly in August and early September. Water Pipits and Horned Larks are only slightly less common here, and Pipits appear frequently on the upper snow peaks, apparently feeding on insect-litter (living and dead) blown into the névé by wind. Robins not uncommonly venture onto the ice of the valley glaciers to feed (presumably on insect-litter). Occasionally, these common glacier-travellers are accompanied by one or more of the sparrows (White-crowned, Golden-crowned). I have a single record of a warbler (Yellow-rumped, 12 August 1981; lower Saskatchewan Glacier).

Ravens are commonly noted soaring over and scavanging on glaciers, icefalls, and high on snow/ice peaks. The upper Athabasca Glacier icefalls seem to attract them regularly, possibly because of food remains left at climbers' camps. In the St. Elias and Mt. Logan areas of the Yukon, Ravens have been blamed for the looting of climbing camps as far as 50 km across snow/ice expanses (Holdsworth *et al.*, 1977). Climbers in the Himalayas have often remarked on the presence of Choughs (a corvid, *Pyrrhocorax graculus*) even at elevations above 8500 m! In the Rockies however Ravens seem to frequent icefalls of glaciers. The occurrence of gulls (generally California, occasionally Ring-billed) in similar situations is much less common, but is not rare. In 1977 and 1978, in mid to late August, gulls were noted above the headwall of Athabasca Glacier, ca. 2750-2900 m elevation, in small groups of 5 to 11, circling for some time and descending onto the icefall. A member of the British Army Adventurous Training team, camped above the icefall in 1978, reported seeing "a flock of birds feeding on something" in the middle icefall. A visit to this site some days later revealed both avian and mammalian remains of varying age (listed below). The fact that these scavengers appear to visit icefalls so regularly suggests that the birds are accustomed to finding food (animal remains) there.

Canada Geese have been recorded a few times on glaciers in the Columbia Icefields area. Possibly the most interesting of these observations was contributed by R. Langlais, who was camped on the Columbia Icefields near the head of the Athabasca Glacier at about 3000 M elevation during a white-out, 25-29 March 1978. While conversing with another party member at the edge of camp, Langlais noticed a Canada

Goose come walking out of the mist to pause a few metres away from the camp perimeter. Langlais reported that the goose remained within sight for the rest of the day, and left only when the weather improved the following morning and travel was again possible. (As a footnote to this account, I found, in the same summer, a single Canada Goose frequenting the small Sunwapta Lake at the toe of the Athabasca Glacier; it remained there for more than seven weeks (late April to July), feeding on Willowherb (*Epilobium latifolium*), willow (*Salix barrattiana, S. vestita,* etc.), sedges and even some Hawk's-beard (*Crepis nana*)

Clark's Nutcrackers have been noted hiding food in the glacier at Mt. Edith Cavell (Angel Glacier). Evidence of birds in the steep broken icefall of this glacier was found by climbers there in 1973, who reported a large number of droppings on ledges beneath seracs. In 1977, 1978 and again in 1983, in late July-early August, I found large patches of fecal litter on the lower tongue of the Athabasca Glacier; these droppings contained mainly berries, and may have been left by Robins or other flocked passerines.

Live Records (Mammals):
Deer Mouse, *Peromyscus maniculatus*
Heather Vole, *Phenacomys intermedius*
Hoary Marmot, *Marmota caligata*
Coyote, *Canis latrans*
Wolf, *C. lupus*
Marten, *Martes americana*
Grizzly Bear, *Ursus arctos*
Moose, *Alces alces*
Mountain Goat, *Oreamnos americanus*

The most commonly-recorded living mammals are Heather Voles. On the middle reaches of the Saskatchewan Glacier, where there is little or no vegetation mat and only sparse clumped sedge, Willowherb, *Dryas*, etc., Heather Voles were seen foraging out onto the ice surface in late evening (August, early Sept. 1978, 1982). It was not clear what food the voles were finding here, but they visited the same ice surfaces where we had observed Rosy Finches earlier in the day. Deer Mice were also noted in similar circumstances on the Saskatchewan, Haig and lower Victoria Glaciers. In most cases, a single animal was seen, but along the Saskatchewan Glacier 2-3 mice might be visible at once.

In late May 1965 I noted a Grizzly Bear descending the Saskatchewan Glacier from southwest to northeast, apparently having come from the Castleguard Meadows. Mountain Goat track has been noted in about this same location, and Goats occasionally crossed the lower tongue of Dome, Stutfield, and Athabasca Glaciers between 1974 and 1983. Wolf track has been found crossing the lower tongues of glaciers in the Icefields area. In 1975 and 1978 I found fresh track of a single animal on the toe of Athabasca Glacier; there were sight reports of another single animal there in 1977. A female Moose used this same route in 1978.

Hoary Marmots have been noted (or their tracks found) on the glaciers in the Kananaskis, Yoho, Lake Louise and Columbia Icefields regions. In 1971 I photographed a marmot descending the boulder-littered glacier beneath Mt. Victoria (Lake Louise) toward old terminal moraines where marmots were known to live and breed. In early June 1978 a marmot travelled about 2.4 km across the partly glaciated Dome Cirque to the lower north flanks of Mt. Kitchener. A fairly thorough survey of this area previously had revealed no sign of Marmots, and it is likely that this individual was on a very long-distance "migration" in search of new territory.

The remains of both birds and mammals are frequently found on the lower parts of major Rocky Mountain glaciers. The following lists are composed of remains recorded in the Columbia Icefields region except where otherwise noted.

Remains (Birds):
Common Loon, *Gavia immer*
Loon, *Gavia* sp.?
Red-necked Grebe, *Podiceps grisegena*
Western Grebe, *Aechmophorus occidentalis*
Grebe, sp.?
Northern Phalarope, *Phalaropus lobatus*
Lesser Yellowlegs, *Tringa flavipes*
Yellowlegs ? (Crowfoot Glacier)
Horned Lark, *Eremophila alpestris*
Townsend's Solitaire, *Myadestes townsendi*
Brown-headed Cowbird, *Molothrus ater*
Chipping Sparrow, *Spizella passerina*
Lincoln's Sparrow, *Melospiza lincolnii*
Sparrow, sp.?

It is evident that fast-flying migrants like the shorebirds could easily run into ice-walls during periods of reduced visibility. The records of

A bird of the higher elevations in our mountains, the Clark's Nutcracker sometimes ventures over glaciers. Photo: Jim R. Salt

these species are almost all from sites in icefalls or seracs where ice walls 3 to 15 m high are common. A Yellowlegs (1 July 1957) and the Northern Phalarope (8 July 1977) were both found on the toe of the Athabasca Glacier after rain/snow squalls during the previous night or day. A wader, thought to be Yellowlegs, was found on the Crowfoot Glacier by climbers in 1979, also among crevasses; this was an old specimen.

Diving birds were most often found on fairly level stretches of ice but my records of these show that all were some distance up the ice tongue, beneath the headwall or other ice prominence (Saskatchewan Glacier, L. Law, Sept. 1977; Athabasca Glacier, C. Roth and J. Salt, Sept. 1977), often close below the major icefalls (upper Stutfield Glacier, 1967, 1979; upper Columbia Glacier, 1975). Loons and grebes may be forced to land by poor weather (white-out) and then find themselves unable to take flight again from the ice surface.

The most commonly-found avian remains are, however, those of small (immature?) passerines, or common local breeders such as Horned Lark, Townsend's Solitaire and assorted (often unidentified) sparrows. Between 1964 and 1983, I recorded approximately 22 dead Horned Larks on the lower Athabasca, Dome and Saskatchewan Glaciers alone, most of them the remains of young birds. These were all individual records, although occasionally two or more birds might be found within 20-30 m of one another and apparently of about the same age. Unlike remains of waders, those of the passerines are not concentrated around seracs or icefalls, but are most often found on fairly level stretches of the lower glacier.

All such remains examined by me have been found in advanced stages of deterioration, and have been found on bare glacier ice, apparently having melted out from beneath surface snows. The reason for their presence here is not clear.

Remains (Mammals):
Long-tailed Vole, *Microtus longicaudus*
Heather Vole, *Phenacomys intermedius*
Richardson's Vole, *Arvicola richardsonii* (Haig Glacier)
Deer Mouse, *Peromyscus maniculatus*
Vole/Mouse sp?
Black Bear, *Ursus americanus* (Waputik Glacier)
Bighorn Sheep, *Ovis canadensis*
Mountain Goat, *Oreamnos americanus*

The mammalian remains most commonly found are those of Heather Vole and other voles/mice. One record of an adult Richardson's Vole was brought by climbers (identity unknown) from the toe of Haig Glacier in the upper Kananaskis Valley; its condition suggested predation. However, none of the other small mammal remains which I examined were eaten or disturbed; all were in states of advanced dessication (the fine silts suspended in glacier ice or melt-water produce a condition rather like mummification, but how long this takes is not known).

Most remains of large mammals are from the upper icefalls of the Athabasca, or the middle section of the Saskatchewan Glacier. In 1977, 1978 and 1980, partial remains of Goat and Bighorn Sheep were found in the Athabasca Glacier between 2750 and 2900 m. Most of the skeleton, including skull, of a female Goat was reported on the north margin of the Saskatchewan Glacier below Mt. Athabasca on 12 Aug. 1981, and from the description I was able to locate this specimen. It appeared to have been killed in late winter or early spring and carried

down from the slopes above the glacier, possibly as a victim of an avalanche. Although goats are popularly associated with the higher parts of mountains, most actually remain near the vegetated parts of mountains, and even males are seldom seen much above 3000 m. But Sacks (1978) believed he had found goat tracks at ca. 3700 m on the summit of Mt. Robson, where there is only crustose lichen vegetation.

A Black Bear was reported on the lower toe of the Waputik Glacier in upper Yoho Valley, in early July 1958 (B.C. McKinnon and party). It was said to be melting out of old avalanche snow. When I visited this area six days later I noted much black fur strewn over a large area but could not locate the carcass. I do not associate Black Bears with high elevations or glaciers in the Rockies, but Okonek (1978) noted an individual in Alaska, threading its way among crevasses for some distance up the Kahiltna Glacier (late July 1976). Okonek suspected that the bear was following the tracks of climbers, expecting to find food at their camp.

In summary: while the diving birds (loons, grebes) and a few shorebirds are occasionally found dead on glaciers, apparently as a result of accident and bad weather conditions, a variety of passerines and small mammals in relatively large numbers are found alive, actively seeking out alpine and glacier ice surfaces for feeding. A number of these die or are killed while there, but the reasons for death are not known.

The author is greatly indebted to the following observers and climbers for individual records and reports. M. Arnold, D. Dorsey, E. Gunderson, R. Langlais, J. Lauchlan, L. Law, B. MacKinnon, B.C. McKinnon, J. Maitland, C. Roth, D. Sept. I also received useful information or reports of specimens from climbing parties or individuals whose names were not recorded.

Literature Cited

Holdsworth, G., D. P. Jones and J. Wyss. 1977. Mt. Logan "centennial ridge". Can Alp. Jour. 60: 13-15.

Okonek, B. 1978. Peaks in "little Switzerland". Amer. Alp. Jour. 21(2), no. 52: 510-511.

Sacks, R.H. 1978. Mount Robson traverse. Amer. Alp. Jour. 21(2), no. 52: 552.

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Hoary Marmots have been seen to cross glaciated mountains, perhaps in search of new territory.

Photo: Jim R. Salt

Alberta Christmas Bird Counts – 1983

Compiled by Virginia Young

As many of you know, the Audubon Society, which coordinates and publishes CBC of all of North America has complained about regional publicaion of CBC data, with particular reference to Canada. Over the last ten years, Alberta "unofficial" counts have generally outnumbered "official" counts, so we must count ourselves as "prime offenders", by their definition.

Granted, it is desirable to have all count data published in one source. However, I have to wonder how many of our "unofficial" counts would simply fade away without hope that the results are of interest locally, through local publication. I suspect a very small percentage of Alberta count participants subscribe to *American Birds*, or have any serious interest in continent-wide results, but probably all participants are interested in Alberta results, as published in the *AN*. It is my hope that FAN, FAN's Corporate Member clubs and individual compilers will address this issue this year, well-before Christmas Bird Count time.

Results of the Calgary count are not included in FAN's compilation.

Banff/Canmore

51°10'N 115°28'W, center on the Bow River 7.2km east of Banff in Banff National Park. Habitat coverage as described in 1976 *American Birds*. December 17, 1983. Temp. -34 to -30°C, wind north 0-8kmh, snow cover 10-22.5cm. Fresh water partly open, wild food crop poor. 37 observers, 27 in 13 parties, 10 at feeders. Total party hours 81 (64 on foot, 17 by car) plus 46 hours at feeders. Total party-km 320 (111 on foot, 209 by car). Observers: Dorothy & Ed Carleton, Sue Davies, Heather Dempsey, Peter Duck, Anna Epler, Halle Flygare, Frank Fraser, Len Glatiotis, Marg Ginoser, Fran Grainger, Jean Greig, Dorothy Hazlett, Helen Herrle, Tom Hoskin, Reinhold Lang, Marlene Langevin, Tom Lothian, Chris MacDonald, Diane & Mike McIvor (compiler – Box 114, Banff, AB T0L 0C0), Harold & Julie Mortimer, Jim Murphy, Nancy Murray, Bunty Nelson, Brian Patton, Sam Plunkett, Jim Robertson, Bart Robinson, Loro Shayne, Bob Smith, Barb Smythe, Jo Stoneberg, Marey Underhill, Keith Webb, Gerry Wilkie (Bow Valley Naturalists).

Bow Summit

51°39'N 116°25'W, center south end of Bow Lake in Banff National Park. Habitat coverage: coniferous woodland 73%, lakes & streams 24%, alpine meadow 3%. December 31, 1983. Temp. -13 to -5°C, partly cloudy, wind 8-24kmh south, snow cover 45-60cm, fresh water mostly frozen, wild food crop poor. Six observers, 6 in 4 parties. Total party hours, 29 (23 on foot, 6 by car), total party-km 135 (39 on foot, 96 by car). Observers: Scott Marin, Diane & Mike McIvor (compiler – Box 114, Banff, AB T0L 0C0), Julie Murphy, Jim Robertson, Gerry Wilkie (Bow Valley Naturalists).

Cardston

December 26, 1983. Total party hours 9, party-km 104 (96 by car, 8 on foot). Temp. -10 to -15°C, no wind, cloud cover 0-100%, light snow flurries. Observer: Shirley Shaw (compiler).

Claresholm

December 29, 1983. Temp. -23 to -3°C, wind W to SW, 8-52kmh, cloud 20%-80%. Total party hours 7.5, party-km 106 (2.5 by foot, 103.5 by car). Observers: Grace Norgard (compiler), Hazel Hudson, Dr. Cara Moser, Laurel Neubeck.

Crowsnest Pass

December 26, 1983. Centered on Hillcrest United Church. Total party-km 70 (6 by foot, 64 by car). Observers: Denise Coccioloni-Amatto (compiler), Curtis Evans, Mae Gibson, Ainsley Gibson, Mike Whittiger. Compiler note: reliable observers on Peregrine Falcon, field descriptions of that and White-throated Sparrow provided.

Dunstable

53°56'N, 114°11'W, center Dunstable school, to include Lac la Nonne, Nakamun Lake, Newton Lake, George Lake, parts of the Pembina River and the hamlets of Belvedere, Sion and Highridge. Elev. 646-706m. Habitat

coverage: deciduous woods 48%, cleared farmland 35%, mixed spruce woods 15%, mature spruce woods 2%. December 31, 1983. Temp. -6 to -3°C, snow cover 15-25 cm, wind negligible. Party hours 15.5, party-km 83 by car, 5 on foot. Observers: Virginia Young (compiler – 3410 E. 74th, Tulsa OK 74136) and Harry Young.

Edmonton

December 18. 1983. Temp. -29 to -22°C, clear, snow cover 15-25 cm, fresh water mostly frozen, wild food crop excellent. Total party-hours 128 (83 on foot, 45 by car), plus .5 hours at feeders; total party-km 810 (144 on foot, 666 by car). Observers: David Allan, Kim Allan, Sam Barry, Pierre Bernier, Jenise Bidulock, Barb Boos, Gary Boos, Marlene Budac, Gordon Burns, Jim Butler, Wendy Calvert, Graham Chambers, Dave Cuthiell, Ray Cromie, Peter Demulder, Dave Dodge, Dave Ealey, Greg Fenton, Jim Flatman, Graeme Greenlee, Patricia Greenlee, Miles Hennie, Allan Hingston, Wes Hochachka, Geoff Holroyd, Harry Horton, Barry Jenkins, Edgar T. Jones, Don Kenyon, Mal Landry, Jim Lange (compiler – 13216-128 Ave., Edmonton AB T5L 3H2), Don Large, Marg Lewis, Sylvia L'Hirondelle, Gerry Lunn, Paul Marino, Ron McElhaney, Jack Park, Paul Peterson, David Poll, Ed Ridgeway, Craig Scharf, Virginia Scharf, Mike Schroeder, Alf Scott, Margaret Skeel, Terry Thormin, Bob Turner, Gail Van Tighem, Kevin Van Tighem, Eric Wallace, Jim Wesley.

Edson

December 26, 1983. Weather: overcast, -24°C, no wind. Observers: Gloria Musson, Ann Rugulies, Heather Marshall, Dean Mushtuk, Cory Kaufman, Darren Petersen, Paul Marshall (compiler).

(Note: no documentation was provided for the Loggerhead Shrike-VY)

Elk Island National Park

Center 53°37'N 112°52'W, at north end of Tawayik Lake to include all of Elk Island National Park and some surrounding farmland; elevation 690-742.5 m; habitat coverage: aspen forest 70%, farmland 25%, frozen lake 5%. December 27, 1983. AM overcast, intermittent heavy snow, PM clear, temp. -19° to -5°C, wind NW 6-20 kmh. Snow cover 15-30 cm. Fresh water frozen. 35 observers, 35 in 13 parties. Total party-hours 93.5 (45.5 on foot, 45.5 by car, 2.5 on snowmobile) plus 1 hour at feeders; total party-km 695 (140 on foot, 542 by car, 13 on snowmobiles). Observers: Susan Alton, Ed Andrusiak, K.E. Ball, Elizabeth Beaubien, Chuck Blyth, Wilma Blyth, Barb and Gary Goos, Marlene Budac, Jean Burgess, Gordon Burns, Jim Butler, Gary Cardinal, Ross and Wendy Chapman, Norm Cool (co-compiler – Parks Canada, Site 4, R.R.1, Fort Saskatchewan AB T8L 2N7), Dana Dolsen, Cam and Joy Finlay, Al Hancock, Geoff Holroyd (co-compiler – Canadian Wildlife Service, Rm. 1000, 9942-108 St., Edmonton AB T5K 2J5), B. and J.H. Horton, Andrew Kiesewetter, Mal Landry, Jim Lange, Don Large, Peter McIlvaney, Diane Murray, F. Nash, Paul Peterson, Bob Purdy, John Reynolds, William Richards, Bob Turner.

Erskine

Center on the Chas. Forsyth farm, NW32-37-21-W4; 10 km south and 6.5 km west of Erskine. January 2, 1984. Temp. 0 to 6°C, SW wind, mostly clear, 20-30 cm snow cover. Total party hours, 17.5; party-km, 225 by car, 8.8 by foot. Observers: Bertha Clarke, Marilyn Foster, Art Haywood, Gladys & Wilf Haywood, Martha & Ron Kruger, Bea & Marvin Lohr, Lee-Ann and Mary-Beth Lohr, Lloyd Lohr (compiler), William Muhlbach, George and Grace Neill, Bob and Bruce Marshall, Helen Shinness, Bruce and Glenys Smith (Buffalo Lake Naturalists).

Fort McMurray

January 2, 1984. 1100 to 1700 hours. Weather, AM mostly clear, winds SSW 25-35 kmh, temp. 5°C; PM partly cloudy, winds SSW 25-35 kmh, temp. 6°C, snow cover 0-20 cm. Observers: John R. Gulley (compiler – Boreas Environmental Consulting Services Ltd., P.O. Box 8201, Ft. McMurray, AB T9H 4J1), Sherry Gulley. (Compiler's note: "Only my wife and I participated this year, and we were not able to conduct the count until the last day of the count period. In addition, we were not able to spend as long in the field as would have been nice, so our count is down significantly from last year's...")

Grande Prairie

Kleskun Hill, east of Grande Prairie, Grande Prairie townsite, P. & G. log haul road south of

At a few locations in Alberta, waterfowl remain all winter, to the delight of Christmas Count birders. Photo: Edgar T. Jones

Grande Prairie, Lake Saskatoon to Goodfare and back via Rio Grande, Wembley and Beaverlodge areas. Temp. -40°C, ice crystals, clear, light WNW breeze. Party-km: 315 by car, 4 on foot. Snow cover 5 cm. Observers: Mr. & Mrs. Ken Lumbis, Gavin and Ellen Craig (compiler).

Hinton

December 18, 1983. Habitat coverage: residential 50%, coniferous woods 35%, cutblock mixed wood 14%, streamside 1%. Temp. -33 to -22°C, wind NW 5-10 kmh, snow cover 30-45 cm. Fresh water frozen, wild food crop fair. Total party-hours 4.75 (1.25 on foot, 3.5 by car) plus 2 hours at feeders. Party-km, 1.6 on foot, 22 by car. Observers: Beth MacCallum, Barry Godsalve.

Horseshoe Canyon

December 17, 1983. No details provided.

Lethbridge

Henderson Lake, Indian Battle Park, west side Oldman River, Tallestrup River Valley, city of Lethbridge (4 feeders), airport area, Park Lake, Coaldale area, Animal Diseases Research Institute, Lethbridge Research Station. Temp. -14 to -11°C, winds NW at 17.5 kmh, 10-14 cm snow cover, overcast all day, moderate snowfall most of day, fresh water mostly frozen. December 26, 1983. Total party-km 141 (118 by car, 23 on foot), party hours, 15.50 (12.25 on foot, 3.25 by car). Observers: Shirley Arner, Bob Blair, Ann and Bill Brown, Doug and Teresa Dolmon, Betty Haig, Alice and Frank Harper, Mary Hientz, Clark Johnston, Betty and George Luco, Bud and Lois McKillop, Betty and Gordon Merrick, Michael O'Shea (compiler), Shiela Petherbridge, Chris Pielou, Herb Sivyer, Jessica, Joyce and Paul Wilkinson, Mary Yohemas.

Red Deer

Observers: Maxine O'Riordan, Dr. W.B. Parsons, Gary Fabris, Helen Harris, Margaret Glabais, Michael O'Brien, Jennifer O'Brien, Cleve Wershler, Jim Potter, Bryan Shantz (compiler), Mike Magas, Beth Peck, Albert Peck, Marjorie Wood, Kerry Wood, Rhondo Wood, Hazel Shantz, Dr. Sandy Murray, Dorothy Murray, Elsie Dowd, Marian Goldstrom.

Snakeshead

51°47'N 114°40'W, center at 32-32-5-W5, as described in previous years. Habitat coverage: wooded upland and edge 50%, open farmland 34%, creek, riverbottom 11%, farmyard 3%, townsite 2%. January 1, 1984. Temp. -1 to 10°C, wind W to SW 0-30 kmh, snow cover 15-30 cm. Fresh water mostly frozen, wild food crop good except for poor spruce cone crop. Total party hours 51 (26.5 on foot, 24.5 by car) plus 8 hours at feeders, total party-km 570 (46 on foot, 524 by car). Observers: Doug Collister (compiler – 3426 Lane Cresc. SW, Calgary AB T3E 5X2), Louise Guillemette, Ferrell Haug, Stewart Holohan, Ed Mah-Lim, Jamey Podlubny, Peter Sherrington, Jack Steeves, Robert Storms, John Thompson, Bill Wilson.

Stettler

Center on the former Streit farm, NE 3-39-19-W4, 3.2 km east and 1.6 km north of Stettler. Habitat coverage: townsite 5%, farmyards 5%, farmland 60%, native parkland and roadsides 30%. Temp. -33 to -25°C, clear, light south breeze, snow cover 20 cm. Total party hours 17, party-km 223.8 (219 by car, 4.8 on foot). December 18, 1983. Observers: Dorothy Brownlee, Jim Burrell, Bernice, Carole and Lloyd Greenlee, Vera Hansen, Gladys and Wilf Hewlett, Vel Hainsworth, Eva Kirtley, Bea and Marvin Lohr, Lloyd Lohr (compiler), Bob, Bruce and Scott Marshal, George and Grace Neill, Barbara Smith, Kent and Kelly Strandquist (Buffalo Lake Naturalists).

Wabamun Lake

Habitat coverage: forest 35%, field 30%, open water 25%, residential 6%, frozen lake 4%.

1983 Alberta Christmas Bird Counts

	Banff/Canmore	Bow Summit	Cardston	Claresholm	Crowsnest Pass	Dunstable	Edmonton	Edson	Elk Island	Erskine	Fort McMurray	Grande Prairie	Hinton	Horseshoe Can.	Lethbridge	Red Deer	Snakeshead	Stettler	Wabamun Lake	WRWC
Pied-b. Grebe	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—
Western Grebe	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Canada Goose	1	—	—	—	—	—	—	—	—	—	—	—	—	—	33	—	—	—	—	—
Green-w. Teal	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mallard	215	—	—	—	12	—	226	—	—	—	—	—	—	—	150	6	1	—	282	1
N. Shoveler	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—
Gadwall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	80	—
Amer. Wigeon	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—
Redhead	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	23	—
Ring-n. Duck	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—
Lesser Scaup	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—
Com. Goldeneye	48	—	—	—	—	—	—	—	—	—	—	—	—	—	18	1	—	—	234	—
Bufflehead	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15	—
Com. Merganser	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	1	—	—	—	—
Bald Eagle	—	—	—	—	—	P	—	—	—	—	—	—	—	—	3	—	—	—	3	—
Sharp-s. Hawk	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
N. Goshawk	—	—	—	1	—	P	4	1	—	—	—	3	—	1	—	2	5	—	3	1
Rough-l. Hawk	—	—	—	1	—	—	—	—	—	—	—	—	—	—	1	—	2	—	—	—
Buteo Sp.	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
Golden Eagle	—	—	—	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
Merlin	—	—	—	1	—	—	4	—	—	—	—	—	—	—	6	1	1	—	—	—
Peregrine F.	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Prairie Falcon	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1
Falcon Sp.	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Gray Partridge	—	—	—	114	—	—	132	—	—	25	—	—	—	—	30	6	7	10	—	3
R.-n. Pheasant	—	—	—	9	—	—	21	—	—	12	—	—	—	2	16	—	—	—	—	—
Ruffed Grouse	—	—	—	—	—	2	1	5	2	2	—	—	—	—	—	2	7	1	8	18
Sharp-t. Grouse	—	—	—	—	—	—	1	—	—	8	—	—	—	—	2	—	5	—	3	3
Amer. Coot	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	—
Com. Snipe	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Rock Dove	—	—	20	80	9	18	704	—	42	73	—	93	—	22	153	47	7	156	74	63
Great H. Owl	—	—	—	2	—	1	13	—	5	4	—	3	—	5	5	—	5	3	5	3
Snowy Owl	—	—	—	1	—	—	2	—	—	—	—	4	—	2	P	—	—	—	—	—
N. Pygmy-Owl	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Barred Owl	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—
Great G. Owl	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Short-e. Owl	—	—	—	—	—	—	—	—	—	—	—	—	—	1	P	2	—	—	—	—
Boreal Owl	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—
B. Kingfisher	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Downy Woodp.	12	—	1	1	5	5	45	7	22	5	3	6	—	8	7	21	25	11	48	26
Hairy Woodp.	7	—	2	—	2	3	10	8	13	1	3	4	—	2	5	9	10	6	17	7
Three-toed W.	8	—	—	—	—	—	3	—	—	—	—	—	—	—	—	1	6	—	—	7
Black-backed W.	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1
N. Flicker	1	—	—	—	—	—	3	—	—	—	—	—	—	—	4	—	—	—	—	4
Pileated W.	2	—	—	—	—	1	4	1	1	—	—	—	—	1	—	4	5	—	—	6
Horned Lark	—	—	29	38	—	—	1	—	—	—	—	23	—	130	172	—	—	—	—	—
Gray Jay	1	20	—	—	—	1	—	29	—	—	—	—	1	—	—	—	29	—	19	125

	Banff/Canmore	Bow Summit	Cardston	Claresholm	Crowsnest Pass	Dunstable	Edmonton	Edson	Elk Island	Erskine	Fort McMurray	Grande Prairie	Hinton	Horseshoe Can.	Lethbridge	Red Deer	Snakeshead	Stettler	Wabamun Lake	WRWC
Steller's Jay	—	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—
Blue Jay	—	—	—	—	—	12	85	27	38	4	8	5	—	1	3	18	24	9	91	23
C. Nutcracker	50	16	—	—	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
B.-b. Magpie	73	—	30	68	18	29	561	19	155	51	—	88	19	110	110	39	80	45	192	199
Amer. Crow	4	—	—	—	—	—	P	—	—	—	—	—	—	—	5	—	1	—	—	—
Com. Raven	131	9	—	19	26	2	—	84	1	—	54	39	167	2	—	2	80	—	21	—
B.-c. Chickadee	109	—	18	6	17	87	468	110	275	37	11	32	—	50	36	179	156	96	620	486
M. Chickadee	121	7	—	—	8	—	—	—	—	—	—	—	—	—	—	—	1	—	—	16
B. Chickadee	44	20	—	—	—	8	22	11	1	—	—	—	—	—	—	23	109	—	49	114
Chickadee Sp.	7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
R.-b. Nuthatch	17	—	—	—	8	—	5	—	—	—	—	—	—	—	3	2	1	—	1	2
W.-b. Nuthatch	4	—	—	—	—	3	11	3	2	—	—	1	—	1	1	6	7	—	19	8
Brown Creeper	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	2
Amer. Dipper	20	1	—	—	4	—	—	—	—	—	—	—	—	—	—	—	1	—	—	8
Golden-c. Kinglet	3	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	3	—	1	3
T. Solitaire	9	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—
Amer. Robin	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
B. Waxwing	20	—	4	32	—	1	4305	—	1	1	30	18	—	112	390	1091	23	303	65	—
C. Waxwing	—	—	—	—	—	—	13	—	—	—	—	—	—	—	—	—	—	—	—	—
N. Shrike	—	—	—	1	2	1	1	—	1	—	—	—	—	1	—	1	4	1	4	—
Logg. Shrike	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—
Eur. Starling	9	—	6	55	—	—	120	—	—	—	—	8	2	3	23	2	—	—	—	—
A. Tree Sparrow	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30	—	6	—	—	—
White-t. Sparrow	1	—	—	—	2	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—
Dark-e. Junco	13	—	—	—	—	—	11	—	—	—	1	1	—	—	5	3	4	—	—	—
Lapland Longsp.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—
Snow Bunting	155	—	28	5	200	40	298	235	240	87	—	297	—	1152	350	40	3291	4758	664	870
W. Meadowlark	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Rusty Blackb.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6
Brewer's Blackb.	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—
Rosy Finch	—	—	—	—	3	—	1	—	—	—	—	—	—	—	150	—	—	—	—	—
Pine Grosbeak	82	—	—	—	—	3	27	23	26	—	6	—	—	—	—	—	23	—	25	21
Purple Finch	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
Red Crossbill	—	—	—	—	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8
Wh.-w. Crossbill	—	—	—	—	—	—	26	2	—	—	—	—	—	—	—	—	—	—	7	—
Crossbill Sp.	—	5	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—
Com. Redpoll	—	—	—	—	—	4	30	66	100	—	—	156	—	8	—	20	10	P	214	20
Hoary Redpoll	—	—	—	—	—	—	—	—	10	—	—	—	—	—	—	—	—	—	—	—
Pine Siskin	—	—	—	—	12	—	13	—	—	—	—	—	—	—	—	—	—	—	—	—
Eve. Grosbeak	58	—	—	—	39	27	228	6	108	4	1	27	—	3	8	294	52	—	306	9
House Sparrow	213	—	33	519	238	105	1161	41	148	114	241	88	—	23	128	237	81	281	147	274
Totals																				
Species	38	7	12	19	24	22	41	22	20	16	10	22	5	24	32	32	37	13	37	38
Individuals	1488	78	—	—	630	—	8684	682	1191	430	358	900	190	1928	—	2064	4075	5680	3259	2498
Observers	30	6	1	4	5	2	52	7	35	20	2	4	2	11	—	21	11	21	17	31

Temp. -6 to -2°C, wind W 5kmh, 15-25cm snow cover, fresh water partly open, wild food crop good. December 31, 1983. Total party hours 54.7 (24.25 on foot, 30.45 by car) plus 0.6 hours at feeder, total party-km 660 (47 on foot, 611.4 by car, 1.6 by snowshoe). Observers: Ray Allan, Elizabeth Beaubien, Marlene Budac, Dave Cuthiell, Graeme Greenlee, Alan Hingston, Geoff Holroyd, Janos Kovacs, Jim Lange, Sylvia L'Hirondelle, Gerry Lunn, Jack Park, Paul Peterson, Craig Scharf, Alf Scott, Terry Thormin. (Special thanks go to Janos Kovacs and friends – compiler.)

Wildlife Reserve of Western Canada

As described in previous years. December 31, 1983. AM mostly clear, PM partly cloudy. Temp. -2 to 5°C, wind SW 0-24kmh, snow cover 25-35cm, water partly open, wild food crop fair except for poor spruce cone crop. Total party hours 122 (77.25 on foot, 42.75 by car, 2 on skis), plus 3 hours at feeders; total party-km 988 (165 on foot, 818 by car, 5 on skis). Observers: Stuart Alexander, Des and Liz Allen, Mairi Babey, Doug Collister, Olga Droppo, Louise Guillemette, Dorothy Hazlett, Dorothy Hill, Stewart Holohan, Clay Hunt, Kate Jones, Kim Kerpan, Heather MacLaurin, Ed Mah-Lim, Jamey Podlubny (compiler – 4520 Bulyea Rd., Calgary AB T2L 2H3), Mike Rogers, Barbara, Ian, Mark and Peter Sherrington, Wayne Smith, Jack Steeves, Don and Philip Stiles, Bob Stroms, Cleve and Ray Wershler, Bill Wilson, Allen Wiseley, Ray Woods.

Hillcrest

(received late for 1982 compilation)
12km radius, center on Hillcrest. 6 observers, 176km by car, 6km on foot, sponsored by Crowsnest-Elk Valley Natural History Society. Species: Mallard 66, Goldeneye sp. 1, Barrow's Goldeneye 6, Merganser sp. 1, Accipiter sp. 1, Rock Dove 10, Gray Jay 4, Black-billed Magpie 42, Common Raven 74, Clark's Nutcracker 2, Black-capped Chickadee 6, Mountain Chickadee 3, European Starling 5, House Sparrow 66. Compiler – David F. Fraser, Biol. Dept., Univ. of Victoria, Box 1700 Finnerty Rd., Victoria, BC.

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With a count of 4305, the Bohemian Waxwing was the most numerous species recorded at Edmonton during the 1983 Christmas Bird Count. Photo: Edgar T. Jones

First Recorded Breeding in Alberta of the Western Bluebird

Dave Elphinstone; Ena Spalding; John Bargman

On April 16, 1984, a call was received on the City of Calgary's Wildlife Information Line regarding the sighting of some "Chestnut-backed Bluebirds" by a couple who own property southwest of Calgary. The birds were first seen on March 30, 1984, and were observed every day thereafter. "Chestnut-backed Bluebird" is the old name for the Western Bluebird (*Sialia mexicana*), a bird not officially on Alberta's checklist. Conversations with various birders however, revealed at least two possible sightings of this species, one in the Kananaskis by Stuart Alexander, Ian Halliday and others, and another by Morag Dornian at Eisenhower Junction many years ago.

The authors quickly drove to the land where the bluebirds were seen and were surprised to see that two pair had set up shop. The area is in the foothills, made up of pasture with aspen stands and nearby mixed wood. Nest boxes were placed approximately 2.5m in the air and had barbed wire placed around them to prevent cattle from rubbing on the posts. The area had an ample water supply some 1,000 metres away.

One pair was observed and photographed at a distance of about 20 to 50 metres, and the second pair from about 100 to 200 metres. Activity included the first pair inspecting the bluebird nesting box; sitting on it together or singly; entering the box; sitting on fence, bush or tree. Feeding took place from the fence, box, tree or ground, but never more than 150 metres from the nest box.

The following description was made on the first visit: males were bright to brilliant blue, darker than the Mountain Bluebird sitting nearby. The male birds had blue on the head and throat down to the upper part of the breast, and on the back to the tail. A blue line extended on one male from the throat to the lower belly and abdomen. The breast and sides were rusty-red, extending lightly over the shoulders and down the back between the wings, making an obvious V pattern. On the first male the reddish colour on the back was less intense. The females were similar to the males but less distinct. The main coloration was a bluish grey, except for some bright blue on the lower back and tail. They also had paler abdomens with a bluish grey throat and some reddish colour on the sides.

Photo: Dave Elphinstone

Western Bluebird at nest box near Calgary.

On a second visit (April 28) the birds were photographed closely and more accurately. There seemed to be a stronger attachment to the nest at both sites. All birds were seen entering the nest, although no sound was heard inside the nest. Dry grass was seen from the entrance in one nest. It was on this visit that at nest number one the male was observed entering with an insect, staying inside for 25 seconds and then sticking his head out to feed the female.

A third visit was made by John and Ena on July 9th, where six large, grown young were in nest box one and four slightly younger birds were found, along with two dead birds, in box two. These nests were also photographed. The young were old enough to reach the opening of the nestbox to receive food.

On June 12, the land owner had reported the successful fledging of six young in the first nest box. The second nest box showed the successful fledging of four young.

On June 26th both pair were preparing to lay new clutches of eggs. Five young were still near nest one and four near nest two. On June 27th it was found that nest box one contained

eight eggs and box number two contained five.

The Western Bluebird has been expanding its range into Alberta from the west side of the Rocky Mountains and should these individuals survive, we may see a growth of this species in the Calgary area.

The authors would like to thank the land owners for their care and concern for these birds as well as for the surrounding environment which has been well looked after. Not often enough are concerned citizens acknowledged for the amount of work involved in setting a large number of birdhouses. It is these people who have helped the Mountain Bluebird and other species regain some stability in this area. It was felt by the land owners (and authors) that the location should not be revealed, as fear was expressed for the property and the birds themselves. We are reminded of a more serious incident regarding the publication of the location of the Mountain Plover nestsite in Southeastern Alberta. Well meaning birders left plenty of off-road vehicle damage on some very sensitive terrain. Further updates will be made regarding these two pair of Western Bluebirds and their young.

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Ancient Murrelet at Beaverhill Lake

Dick Dekker

The Ancient Murrelet (*Synthliboramphus antiquus*) is a small diver of the North Pacific that has occasionally been reported far inland (Godfrey 1966). There are two records for Alberta; a dying bird was picked up near Edmonton (Weseloh and Weseloh 1978); the other, alive and well, was observed by several bird watchers in Calgary (Wiseley 1983).

This note describes a sighting of the species at Beaverhill Lake on October 2, 1983. The weather was overcast with strong northwest winds. As I was walking along the east shore of the lake, south of the Mundare beach road, a small alcid flew by low over the water, going south. It settled on the waves quite far away. Presently, I saw it come toward me, allowing a frontal view. It then disappeared in the distance. During the next half hour or so, it came back four more times, flying back and forth. These rather distant views were sufficient for positive identification. The bird was dark grey above and whitish below, with a black cap. A dark bar extended on the side of the neck. About two hours later, at 1430h, I had a much more detailed look. Just as I drove up to the weir on the southeast corner of the lake, an alcid flew in from the north and settled onto the water at the east end of the dam. It stayed there for about half an hour, while I sat down on the shore and observed the bird through 10X binoculars from 15-30 metres away.

Details of the plumage included the following. Chin, throat, face, eyes and feet were black. The bill was very small, slightly upturned, bone-coloured and darker toward the tip. The underside of the wings were whitish with dark edges.

The murrelet dived frequently, spreading wings and tail, and leaving a trail of air bubbles. When at rest, it lay low, head lowest, feet extending beyond the tail. Sometimes it "idled" with one foot, that kicked up droplets of water, "like the propeller of a small outboard motor".

At about 1500h, the bird flew away to the north, and I continued my walk across the weir to the south shore of the lake. An hour later, the murrelet was back at the east end of the dam. The day after, I was unable to find it.

Allen Wiseley (1983) briefly reviews the literature on inland sightings of Ancient Murrelets in the United States. Apparently, such sightings occur after periods of stormy westerly winds along the Alaska and British Columbia coasts. Such weather patterns that push migrating birds inland may have been a factor in my sighting of the murrelet. On the same day I saw several other birds which are locally uncommon and normally occur on the coast: Red knot (*Calidris canutus rufus*), Dunlin (*Erolia alpina pacifica*), and Parasitic jaeger (*Sternorarius parasiticus*).

Literature Cited

Godfrey, W. Earl. 1966. The Birds of Canada. National Museums of Canada Bulletin No. 203. 428 pp.

Weseloh, D.V. and L.M. Weseloh. 1978. First record of the Ancient Murrelet for Alberta. Canadian Field-Naturalist 92: 200-201.

Wiseley, Allen N. 1983. Ancient Murrelet in Calgary. Alberta Naturalist 13(2): 49-50.

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F.A.N. NEWS

The 1985 Annual General Meeting of the Federation will be held at the Dawe Community Center, 56 Holt St., Red Deer, on January 26, 10:00 a.m. The evening program is tentatively titled "Natural History Studies — What Role Can You Play?" and will feature a number of case histories of successful natural history studies that involve cooperation among amateurs and between amateurs and professionals.

Field trips will be planned by the Red Deer River Naturalists for both January 26 and 27. Details on the meeting will be forthcoming either in a direct notice or in the December *Alberta Naturalist*.

FAN Spring Meeting

FAN's Spring Meeting was held in Stettler on the May 19-21 long weekend. If I may be so bold, it was one of the more enjoyable meetings I have attended and commendations must be extended to the Buffalo Lake Naturalists for their exceptional job of organization. Absenteeism amongst the Directors contributed to one of the briefest Director's Meetings on record. Or perhaps it was the lack of highly contentious issues which contributed to the brevity.

The Saturday morning field trip led by Virginia Maitland visited White Sands and Bar Harbour. The Saturday afternoon field trip travelled southwest of Stettler to Ewing Lake. It was led by Lloyd Lohr, assisted by Ron Kruger and Bill Muhlbach. The evening meal was catered by Don Gillespie. Over 60 people were in attendance for the meal and evening program. The evening program was led off by Steve Brigg, a naturalist at Dry Island Buffalo Jump Provincial Park. He showed many excellent and informative slides covering the park's geography, geology, flora and fauna. The evening concluded with a substitute presentation by Lloyd Lohr who showed slides taken on FAN field trips going back at least a dozen years. Some of them might even be construed as incriminating. Goodies and refreshments wrapped up the evening.

Sunday's field trip was to Charley Bird's farm and the Buffalo Lake Narrows area. Approximately 30 people made the trip. After a chat on monitoring the weather and agricultural practices versus natural areas the group settled down for lunch while trying to avoid getting rained on. When the weather improved the group began the trek across the farm to the provincial campsite at "The Narrows." Spring was off to a fairly late start, but the participants appreciated what flowers were in bloom and an obliging Clay-colored Sparrow who posed calmly while we all tried to identify it.

A special field trip was arranged on Monday to the proposed Rumsey Parkland Ecological Reserve. Bill Melnyk, a rancher from Big Valley, led the trip and proved to be a personable and informative guide. Some of the grassland areas of the proposed reserve have never been broken and provide some of the best examples of rough fescue prairie available. Seventeen people partook in the field trip and an enjoyable time was had, despite the very strong winds which plagued the weekend.

The Directors would like to extend a special thank you to all those involved in planning and preparing for the meeting and especially to those members of the Buffalo Lake Naturalists who so kindly provided billets.

J. Derek Johnson

New Brochures For FAN

Recently, 5,000 brochures have been prepared for soliciting new FAN memberships. These colourful brochures were designed by Alistair Justason of Canmore and printed by Europe Offset in Edmonton. Diane McIvor undertook much of the early planning and Dick Dekker oversaw the final production of the brochures. I would like to thank these people for their work on the brochure.

If any members know of a good location for distribution of these brochures, so that we can encourage more new members, please get in touch with your local club directors or write to me and I will send a bundle (see address at inside back cover).

David M. Ealey

NOTES AND NEWS

Grants Available for Canadian Bird Research

The James L. Baillie Memorial Fund for Bird Research and Preservation invites applications for grants to support projects on Canadian birds in 1985. While grants have previously been restricted to Ontario, the Fund will now consider applications from other parts of Canada.

The Fund's aim is to encourage field studies by amateur naturalists and to support projects which increase or disseminate knowledge of birds in their natural environment and/or contribute to their preservation. Priority will be given to projects which utilize the efforts of volunteer naturalists in conducting research or fieldwork and to applicants who have little or no access to other sources of support.

Two types of grants will be offered in 1986: (a) Project Grants and (b) Ontario Atlas Fieldwork Grants. Any project which has a volunteer component and otherwise meets the Fund's objectives is eligible for a type (a) grant. Type (b) grants provide partial support for travelling expenses to remote central and northern areas for fieldwork on the Ontario Atlas of Breeding Birds. Requests for funding of atlas projects elsewhere in Canada should be directed to type (a) grants.

Grants do not normally exceed $1000. Applications for Project Grants are due by 31 December 1984 and for Atlas Fieldwork Grants by 28 February 1985. All applications should be submitted on forms obtainable from the Secretary: Martin K. McNicholl, The James L. Baillie Memorial Fund, c/o Long Point Bird Observatory, P.O. Box 160, Port Rowan, Ontario N0E 1M0.

The James L. Baillie Memorial Fund awarded 5 Project Grants totalling $1,475.00 and 9 Ontario Atlas Fieldwork Grants totalling $3,420.80 in 1984. The Fund is financed in part from proceeds of the Baillie Birdathon. Donations to the Fund are tax deductible and may be sent to the address given above.

Loran L. Goulden Memorial Award Nominations

Nominations for the Loran L. Goulden Memorial Award for outstanding contributions to natural history in Alberta are sought at all times, but to be considered for the 10th Annual Award should reach the Chairman of the selection committee by 1 December 1984. The 10th award will be presented at the annual General Meeting of the Edmonton Natural History Club in January 1985. Nominations may be for contributions in any field of natural history within the province of Alberta. All previous nominations of persons who have not yet received the award will be considered, but nominators of such persons are encouraged to update these nominations. Previous Awardees have been: Dick Dekker, W. Ray Salt, Charles E. Bird, Robert Lister, Joy Finlay, John M. Powell, Lois Fenna, Martin McNicholl, and Fred Schutz. Nominations should be sent in writing to the Chairman or given to another member of the committee (Margot Hervieux, Edmonton; Mary Lore, Calgary; Gwen McCauley, Ottawa). John M. Powell, Chairman, Loran L. Goulden Memorial Award Selection Committee, 5828 – 143 St., Edmonton, Alberta T6H 4E8 (435–7006).

ANNOUNCEMENTS

CSEB National Conference

The Canadian Society of Environmental Biologists (CSEB) will be holding its 25th annual conference on January 3–5, 1985 in St. John's, Newfoundland. The theme of the symposium is Environmental Research in Atlantic Canada. As in the past, the symposium will be held in conjunction with the Canadian Conference for Fisheries Research (CCFFR) and the Society of Canadian Limnologists (SCL). Further information is available from: Canadian Society of Environmental Biologists – Alberta Chapter, P.O. BOX 12, Substation 11, University of Alberta, Edmonton, T6G 2E0.

CLUB NEWS

Calgary Field Naturalists' Society

Recent activities have included the annual bus trip, this year to Dry Island Buffalo Jump, and the Annual General Meeting, held on June 20.

New Officers were elected and we are pleased to announce our new President will be Jean Gill, who has put in much "back-scene" work for the society in the past. Cathy Osborne, who has been secretary for some years now, has stepped down. We thank Cathy very much for all that she has done for the society in this office and are very appreciative of her enthusiasm and hard work. We extend a welcome to Margaret van Koll, who is to replace her and also to Doug Collister who is to be the new Director at Large. Elections were followed by three films, "Edible Plants in Summer," "Above the Timberline," about alpine tundra plant and animal life, and "Mountain Life Zone Communities," a film about the flora and fauna of the different life zones of the mountains.

Active groups within the C.F.N.S. are the Bird Study Group, the Botany Study Group and the Natural Areas Group. The bird study group has been sharing thoughts, notes and slides of some white-winged gulls that flew into Inglewood Bird Sanctuary for a while and caused a stir. Also, we have been treated to an evening of slides and discussion with Peter Sherrington, and our August meeting featured one of our members, Louis Guillemette talking about Flycatchers. This group has had several interesting birdwalks lately and had a barbecue and birdwalk at Lloyd Lake, southwest of the city, on August 27th. The botany study group, which lays dormant for part of the year, has blossomed forth, with meetings every Thursday throughout the summer, led by Jim Posey. The natural areas group meets monthly and is involved with watchdogging the natural areas around the city which developers may be wanting to "improve".

The C.F.N.S. also co-sponsors with the City of Calgary, guided nature walks in the natural areas of Calgary.

Among the speakers we are hoping to lure to our fall meetings this year are Dr. Val Geist and F.A.N. President, Dave Ealey. Dr. Geist is a well-known authority on mountain sheep and ungulate behaviour in general. Dave Ealey will be talking on Dippers, the subject of his Master's thesis.

Kate Jones

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A bird of seashores and large lakes, the California Gull is occasionally seen over the glaciers of our highest mountains. See article pages 86-90. Photo: Jim R. Salt

F.A.N. Membership Fees Are: Regular $10 per year; Supporting, $25 or more per year (with excess over $10 being deductible from your taxable income):

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Fred Schutz Receives the Loran L. Goulden Memorial Award

Maxine O'Riordan

In January of 1984, the Edmonton Natural History Club awarded the ninth Loran L. Goulden Award recognizing those who have made outstanding contributions to natural history in Alberta. This year, Fred Schutz of Bluffton was the recipient of the award, made in memory of a young naturalist whose life was taken in a plane crash in 1974.

Fred Schutz has lived in the beautiful wooded Blindman Valley since 1921. For years he has observed nature closely and at first hand in its natural setting. Always his findings were reinforced with extensive reading from a personal library of hundreds of books. We need always scientific experiments and formal education in various disciplines, but we must always temper these with practical realism and a degree of passion and emotionalism. The award celebrates the qualities Fred brings to environmental concerns as a valuable complement to the professionals in the field.

Fred is probably best known for his weekly column in the Rimbey Record called "West of the Blindman." The column has been written for over thirty years and has totalled around 1500 individual articles. Topics were wide ranging; archaeology, stories of the area's pioneers, the constellations and weather phenomena, but most important of all, articles about wolves, and watersheds, hawks and habitat and all nature dominated the popular column. And so, subtly and persistently, Fred has shaped public opinion in Central Alberta. There were frontier times when nature was to be tamed and savaged, and modern times when economics cried for elimination of windbreaks and buffer zones, and always Fred's voice was an advocate for nature. As early as the 1940s he set aside large tracts of natural areas on his own farm to preserve wildlife habitat.

Fred Schutz has also served as President and Director of the Red Deer River Naturalists, and is now a Director of the Federation of Alberta Naturalists. He has presented numerous briefs at public hearings regarding a full array of environmental issues such as land use, damming of rivers and ecological reserves. He is currently serving as a Director of the innovative Ellis Bird Farm, where nature and industry meet, and the bluebird is the winner.

In 1962, Fred was commissioned by the Rimbey Centennial Committee to write a book entitled *Paskapoo*, the history of the Upper Blindman Valley. He has contributed to other district histories, as well as the *Blue Jay*, the *Alberta Naturalist*, Red Deer's own *Central Alberta Naturalist* and the *Farm and Ranch Review* (no longer in publication).

Fred is also active in community affairs, helping to found the Rimbey Historical Society and serving on the executives of a number of organizations. He spends a great deal of time in assisting school and youth groups in outdoor education, maintains a bluebird trail, and is a superb nature photographer.

Fred's conscientious ranching, writing and lobbying efforts on behalf of nature have earned him a great deal of respect, and this in turn, has brought credit and credibility to the naturalist community. The Loran L. Goulden award is a wonderful way to say, "Thank you Fred".

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Fred Schutz at a moment of rest in his busy schedule of activities.

Photo: Maxine O'Riordan

Feeding of Pine Siskin by White-winged Crossbill

Jim R. Salt

While engaged in biological field studies in the Columbia Icefields region in the spring and summer of 1977, I spent some time observing feeding habits and activities of various common avian species. On the morning of 6 June, about 8:20 a.m., in the company of D. Sept, I noted a mixed flock of passerines feeding along a short entry road at Tangle Creek, ca. 7 km NW of the Athabasca Glacier. This group contained approximately 20 Pine Siskins, *Carduelis pinus* and 10 crossbills, including White-winged (*Loxia leucoptera*) and Red (*L. curvirostra*) of both sexes. The three species mingled freely, taking food from the ground and from fallen cones beneath mixed conifers. While we watched, one of the siskins began a begging ritual; this is typical of many fledgling passerines, and is also noted occasionally in adult females during courting. The bird's head was tipped back, beak gaping, while the wings were drooped and fluttered rapidly. After a short time we saw a female White-winged Crossbill approach the begging siskin and appear to feed it. The siskin's begging attitude and wing-fluttering continued; the female crossbill extracted another seed from a cone and seemed about to feed the siskin again when a disturbance sent all the birds into neighbouring pines, spruces and firs. We did not remain to see whether they resumed feeding.

A relatively large number of adult male birds engage in ritual feeding of the female as part of courtship. The female often initiates this by a begging display resembling that of a fledgling. Such activities are well-documented, but all occur between adults of the same species.

The subject of our observation, however, was an adult female crossbill, which reacted as if to one of its own fledglings. Inter-specific feeding of young is generally assumed to be restricted to those obvious cases in which young of a parasitic breeder (Cowbird, *Molothrus ater*) are fed by "adoptive parents". It should be stressed that, at this early date, we had noted no young of any of these species in the area; all birds observed were fully adult. We probably witnessed a case of "cross purposes". It seems likely that the siskin was attempting to appeal to a male of its own species, in early mating ritual. The female crossbill, on the other hand, appears to have been reacting to the stimuli of the gape and the wing-fluttering of the siskin – two behavioural characteristics typical of young out of the nest. In view of the notoriously erratic breeding chronology of the crossbills, this behaviour of the female may have had little or no connection with the female's actual breeding status or condition at the time.

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Redstart caught in net for banding. Edgar T. Jones

Alberta Banding Effort, 1981

The 1981 summary of birds banded in Canada (C. Hyslop and A. Demers, 1984 *Can. Wildl. Serv. Progress Notes* No. 145) shows 28,408 birds of 135 species banded in Alberta under 16 active master permits. Sixteen percent of the birds banded in Canada were banded in Alberta, and of all species banded, 44% were banded in Alberta. Banding effort was most intense for game species, as 68% of the birds banded were game (19,253), whereas only 32% (9155) were non-game. Non-game species comprised 85% (115) of the species total, with game species accounting for only 15% (20 species). Ducks took all three top positions in numbers of game birds banded: Mallard (7596), Blue-winged Teal (4611) and Northern Pintail (3377). The top non-game birds were Double-crested Cormorant (1943), Tree Swallow (916) and Tennessee Warbler (565). Unfortunately, the 1981 report does not include the usual list of numbers banded for each species in each province, although the text refers to a table with these figures. Perhaps budget cuts resulted in deletion of the table.

Martin K. McNicholl

The Tiger Beetles of Alberta — Life History and Key

Gerald J. Hilchie

Tiger beetles have always been popular with collectors. Bright colours and quick flight make these beetles a sporting and delightful challenge to collect.

In Canada, Wallis (1961) recognized 26 species of *Cincindela*, and of these, 19 species have been confirmed to occur in Alberta. Most species of tiger beetles in North America are represented by several subspecies. In Alberta most species are represented by a single subspecies. Two species are represented each by two subspecies, and two other species have been shown to hybridize and might be better described as a single species with very distinct subspecies. In some cases, when a single subspecies is declared as the only representative of a species in the province, other morphs (colour phases) which are normally attributed to other subspecies may be present; in those instances, the most common morph (over 80% of a population) has been used for subspecies designation.

The following life history and key to Albertan species is based in part on the content of two university term papers presented in 1975 and 1977.

Adults

These beetles are capable fliers and quick on their legs and are able to escape rapidly when disturbed. Most tiger beetles are diurnal, preferring bright sun. However, some are active at night. One species in Alberta, *Cicindela lepida*, is normally active during the day. However, on warm nights adults will resume hunting activities shortly after sunset. Most tiger beetles at the onset of night or inclement weather dig shallow burrows for refuge.

Alberta *Cincindela* can be divided into two categories based on the life span of the adult: those species with long-lived adults which overwinter (spring-fall) and those in which adults live for a single summer (summer). In spring-fall species, adults prepare for winter in late summer or early autumn by excavating a deep burrow (Figure 2). Wintering quarters vary in depth, depending on the species and nature of the soil. *Cincindela repanda* adults will dig a burrow 15 to 21 cm deep in clay soils and up to 56 cm deep in sandy soils, *C. formosa* adults have been recorded digging burrows down to 109 cm in sand (Criddle 1907).

It is believed that spring-fall adults are sexually immature in the fall (shortly after emergence from the pupa). Winter chilling may be needed to break a reproductive diapause, which is a period of suspended development or growth. Wintered adults lay eggs in the following spring.

Summer adults do not diapause and are reproductively active within days of emergence from the pupa.

Tiger beetles can be ecologically grouped. In Alberta, species found along streams tend to have dark elytra (the thickened front wing) with well defined maculations (patterns of spots and markings) (*C. repanda, C. hirticollis, C. duodecimguttata, C. oregona*), those found on dark soils often have reduced maculation and are black in colour (*C. nebraskana, C. purpurea purpurea, C. longilabris*), those found along margins of sand dunes tend to be brightly coloured (*C. formosa formosa, C. lengi, C. scutellaris*) and those species found in the open on drifting sand are very pale blending in with the sand (*C. limbata nympha, C. lepida, C. formosa gibsoni*).

Food for adults is composed of other insects, almost any insect will be taken with the exception of certain bugs and prey that are too large or too small to handle. Larger tiger beetles will opportunistically prey on other smaller species.

There are few effective predators of tiger beetles. Dragon flies and robber flies have been observed catching tiger beetles in flight (Graves 1962, Lavigne 1972). Birds occasionally prey on the beetles. Droppings of Ring-billed Gulls (at Gull Lake, Alberta) contained pieces of elytra from *C. repanda* and *C. hirticollis*. Normally the quick movements, rapid flight and cryptic coloration make it difficult for predators and people to find or capture the beetles.

Tiger beetle wintering burrows. In sand these may go to a depth of over 1 m. Photo: Gerald J. Hilchie

Eggs and Larvae

Eggs are deposited in spring through summer, depending on the species. The female makes a small hole in the ground with her ovipositor then deposits a single egg. The egg hatches a few weeks later into a first instar larva. (An instar is the stage of an insect between successive molts.) The larva first enlarges the hole then positions its head and thorax at the burrow entrance and waits for its first meal (cf. Figure 2). If prey is readily available, feeding will last for a few weeks, then the larva plugs its burrow entrance and remains dormant until late summer. Feeding then resumes for a few weeks or until the onset of cold weather. The larva diapauses until spring at which time feeding resumes again.

Depending on the species, larvae may reach maturity (third instar), pupate and emerge as adults by the end of June (summer adult species). Alternately larvae stop feeding during mid-summer, resume feeding in late summer, then pupate and emerge as adults in late August – early September (wintering adult species). In all species at least one larval instar passes through winter, but only in spring-fall species do the adults survive a winter (Criddle 1907, 1910; Hamilton 1925; Shelford 1908; Willis 1967).

Tiger beetle larvae, like the adults, are carnivorous. Large mandibles provide an effective means of subduing prey (cf. Figure 1). Larvae of *Cincindela formosa* may dig a pit at the burrow entrance, this may be used to trap ants and other small insects (Criddle 1910). Most species do not dig a trap but rely on lunging and seizing prey near the burrow entrance. Prey is pulled into the burrow and the larva then consumes it in relative safety. Strong abdominal spines anchor the larva to the burrow wall (cf. Figure 2) preventing accidental dislodgement by large prey. If the prey is too large, the larva releases the would be victim and retreats by dropping to safety at the bottom of its burrow.

Larval burrows vary in depth according to species, soil type and larval age. Depths range from a few cm for *Cicindela repanda* and *C. duodecimguttata* along stream margins to depths in excess of 3 m for *C. lepida* and *C. formosa* on sand dunes.

Few predators attack tiger beetle larva. Some Beeflies (Bombilidae) lay eggs near burrow entrances. The hatching fly maggot may then locate and parasitize the tiger beetle larva. Parasitized larva fail to develop, dying during or just before pupation. Swan (1975) found up to 7% of a population of *Cicindela scutellaris* larvae to be parasitized. Another larval parasite is the tiphiid wasp, *Methocha*. These small wingless

wasps wander in areas occupied by tiger beetle larvae. When seized, the wasp immediately stings the tiger beetle larva in the soft membrane under the head, causing temporary paralysis, an egg is laid and the wasp wanders off to be grabbed by another victim. The narrow elongate shape and armored cuticle protect the wasp from being pierced by the larva's mandibles and allow the wasp to manoeuver and sting the larva. The wasp larva hatches and remains attached as an external parasite. When the tiger beetle larva pupates, the wasp larva then begins to actively feed, consuming and killing the pupa from the inside out.

Pupa

Pupation occurs in a specially prepared chamber to the side of the larval burrow. In summer adult species the larvae feed for a while then molt into a pupa. The larvae of spring-fall adult species feed for an extended period in the spring and may feed in late summer before molting into a pupa (August). Pupation lasts for a few weeks. Summer adult species emerge as adults in late June and early July, while wintering adult species emerge as adults in late August through early September. The wintering adults feed for a short time before entering winter diapause, with breeding occurring in the following spring.

Speculation on factors influencing selection for summer or spring-fall species

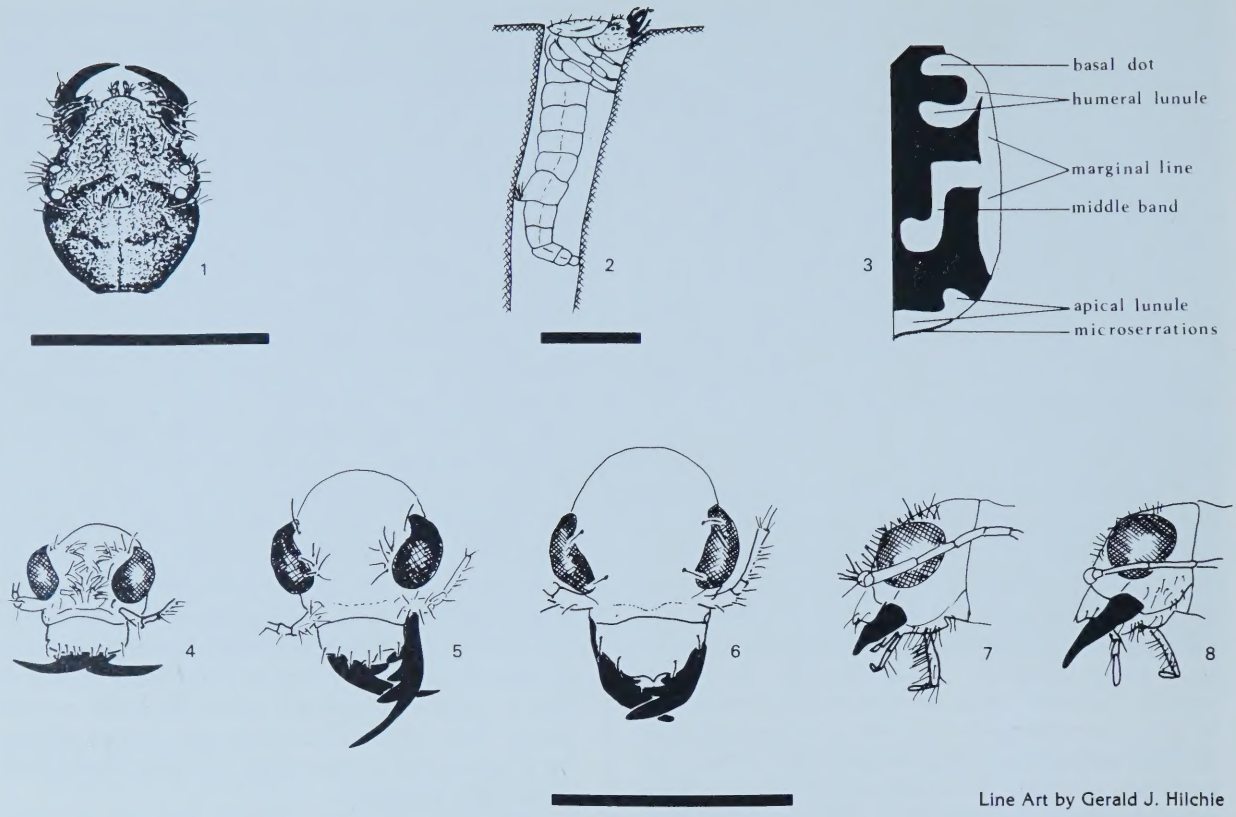
Why are there two basic life history strategies? Habitat may be suggested as influencing life history. A problem arises with this hypothesis; the four summer adult species occuring in Alberta occupy different habitats. *Cicindela lepida* lives on sand dunes, *C. nevadica* on alkaline soil, *C. punctulata* on gravelly prairie soil and *C. pusilla* lives on clay or dark loamy grassland soils. These four species tend to be smaller than spring-fall species. Their small size makes them potential prey of larger tiger beetles and less competitive for some types of prey (when competing with slightly larger tiger beetles). The most intense levels of interaction would potentially occur in early spring when large numbers of wintered adults are present and food resources still potentially limiting. A midsummer adult emergence by summer species would avoid much interspecific competition as populations of spring-fall species would be approaching a seasonal low. For example, the summer species *C. lepida* occupies what appears to be the same habitat as *C. limbata nympha* (wintering adult species). Adults of both species are about the same size and subsequently utilize similar food resources. *Cicindela limbata nympha* populations are very high in early May through mid-June. The population declines through natural mortality and predation reaching their lowest levels about mid-July. In late June *C. lepida* emerges from pupation with the population peaking about the first week of July then trailing off through early August. In mid-August the next generation of *C. limbata nympha* begins to emerge with a population maximum by late August. These beetles then overwinter and re-emerge the following spring.

Several spring-fall tiger beetle species live in the vegetation zone surrounding the sand dune. These (*C. formosa, C. lengi* and *C. scutellaris*) species are larger and readily prey on other species of *Cicindela*. These species are also at minimum population levels when *C. lepida* adults are present. Another interesting point is that *C. lepida* adults are active at night on the dune. This greatly increases the time available for hunting and reduces the risk of predation by other tiger beetles.

The other summer adult species in Alberta do not appear to have as complex interactions with other tiger beetle species as does *C. lepida*. It is possible that being a summer adult species has/had a competitive advantage either in the past or in a portion of a species' present range. These interactions would not be currently observed in Alberta.

There must also be some advantage gained from being a spring-fall species. Upon examining distribution maps, one aspect becomes evident, spring-fall species have ranges which extend north into cooler climatic zones. A prolonged larval development with a long feeding period allows for greater success in obtaining adequate nutrition for completion of development. In some spring-fall species the larvae may take several seasons to complete development. Interactions with other tiger beetle species are limited with one or two species in similar, but not identical, habitats.

Each tiger beetle species has its own unique history. Variations occur with some species not fitting neatly into a defined pattern. Further investigations are required to elucidate precisely what factors are involved in maintaining these two life history types in Alberta.

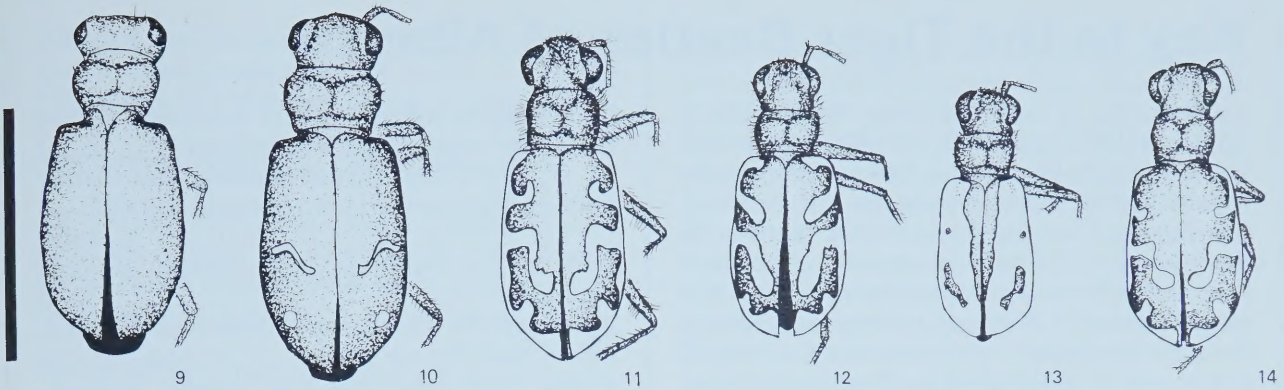


Line Art by Gerald J. Hilchie

Figures 1-8. Drawings of larva and character states on adults. Scale line = 5mm. Fig. 1. Larval head and prothorax of *C. oregona oregona*, Osoyoos, B.C. Fig. 2. Habitus of generalized *Cicindela* larva. Fig. 3. Generalized maculation pattern with nomenclature used. Fig. 4. Hairy head; *C. limbata nympha*. Fig. 5. Head with clustered hairs on inner edge of each eye; *C. scutellaris*. Fig. 6. Glabrous head; *C. nebraskana*. Fig. 7. Glabrous genae (cheek area); *C. fulgida*. Fig. 8. Hairy genae; *C. duodecimguttata*.

Figures 9-20. Adult tiger beetles, line drawings, colour refers to normal range, locality refers to where the specimen was collected. Scale line = 10mm. Fig. 9. *C. nebraskana*; black; Empress, Alta. Fig. 10. *C. longilabris*; black to green; Fedora, Alta. Fig. 11. *C. hirticollis*; brown to olive; Gull Lake, Alta. Fig. 12. *C. limbata hyperborea*; brown; Fort MacKay, Alta. Fig. 13. *C. limbata nympha*; brown to greenish; Crimson Lake, Alta. Fig. 14. *C. repanda*; brown; Edmonton, Alta. Fig. 15. *C. oregona oregona*; brown, green, blue; Summerland, B.C. Fig. 16. *C. oregona guttifera*; brown; Kootenay Plains, Alta. Fig. 17. *C. oregona X C. duodecimaguttata*; brown; Carbondale River, Alta. Fig. 18. *C. duodecimguttata*; brown; Stauffer, Alta. Fig. 19. *C. tranquebarica*; grey to brown; Calgary, Alta. Fig. 20. *C. fulgida*; coppery to metallic green; Lost River (near Onefour), Alta.

Figures 21-32. Adult tiger beetles, line drawings, colour refers to normal range, locality refers to where the specimen was collected. Scale line = 10mm. Fig. 21. *C. formosa formosa*; red violet; Empress (11km south), Alta. Fig. 22. *C. formosa gibsoni*; red to violet; Maple Creek (16km north), Sask. Fig. 23. *C. lengi versuta*; rust, rarely green, blue, or black; Chappice Lake, Alta. Fig. 24. *C. scutellaris scutellaris*; red-green; Empress (11km south), Alta. Fig. 25. *C. pusilla cinctipennis*; green to olive; Calgary, Alta. Fig. 26. *C. pusilla imperfecta*; green to olive; Kootenay Plains, Alta. Fig. 27. *C. purpurea*; green or black; Lost River (near Onefour), Alta. Fig. 28. *C. decemnotata*; green; Lethbridge, Alta. Fig. 29. *C. splendida limbalis*; red to green; Crimson Lake, Alta. Fig. 30. *C. nevadica knausi*; copper to brown; Jenner Ferry, Alta. Fig. 31. *C. punctulata*; grey brown; Empress (11km south), Alta. Fig. 32. *C. lepida*; pale with brown; Empress (11km south), Alta.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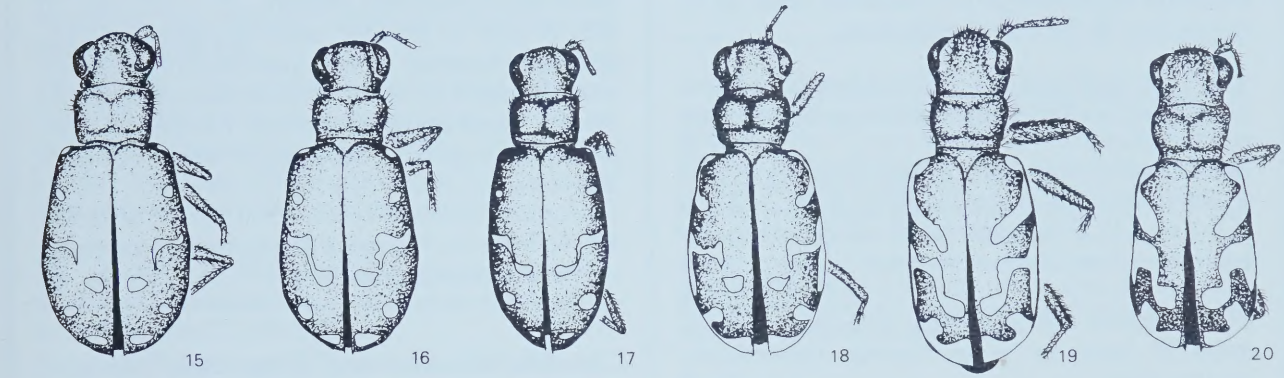
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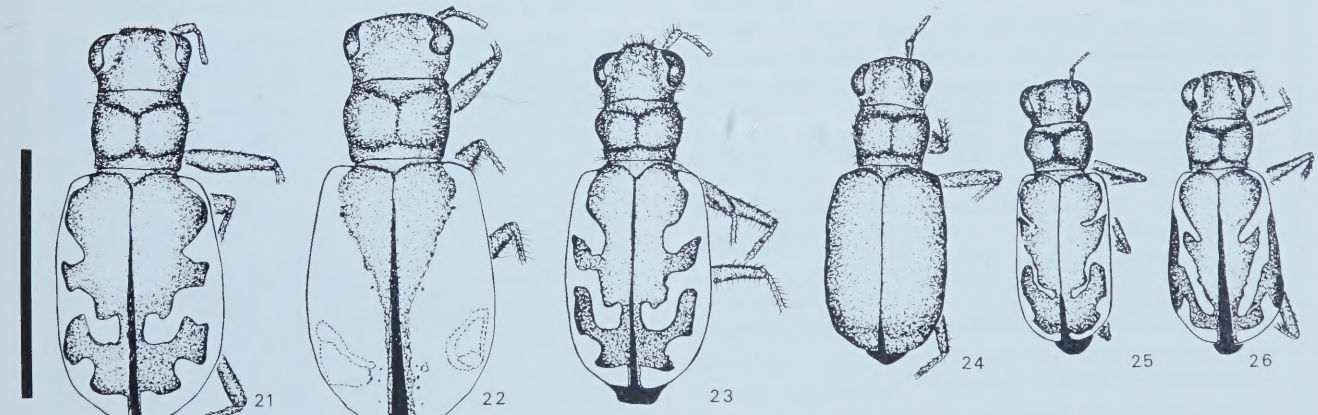
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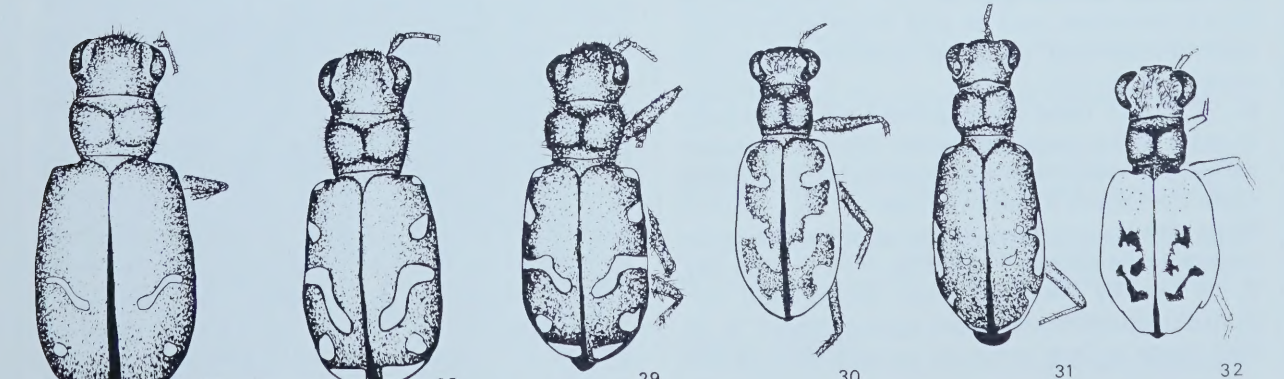
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Key to the Tiger Beetles of Alberta

This key is adapted from Wallis (1961), Freitag (1965) and Willis (1968). When two subspecies are present in Alberta information regarding their separate recognition is included. See Figure 3 for details on elytral maculation nomenclature. When examining characters such as presence of microserrations (Figure 3), a magnification of 40X may be required. Most of the other characters can be seen by the unaided eye or with a 10X hand lens. The figures in the key refer to drawings of character state or illustrations of the tiger beetle taxa.

1. Frons glabrous (front of head without hairs) or with two supraorbital setae (large hairs by the eye, Figure 6) . . . . . To 2
Head covered with hairs or with clusters of hair on the inner edge of each eye (Figure 5) . . To 6

2. (From 1) Elytra apices serrate (finely toothed) with a row of blue or green foveae (Figure 31) . . . . . *C. punctulata*
Elytra apices not serrulate, without a row of metallic blue to green foveae (punctures, shallow pits) . . . . . To 3

3. (From 2) Small beetles, less than 15 mm in length, labrum (upper lip) short (length parallel to long axis of body less than one half of its width) . . . . . *C. pusilla* . . . . . To 4
Larger beetle, greater than 15 mm in length, labrum long . . . . . To 5

4. (From 3) Marginal band complete (Figure 25) . . . . . *C. pusilla cinctipennis*
Marginal band reduced (Figure 26) . . . . . *C. pusilla imperfecta*

5. (From 3) Elytra shallowly punctate (marked with minute spots or depressions) or sculptured into waves, shiny between punctures or on crests of waves, abdominal sternites (thickened plates) dull black (Figure 9) . . . . *C. nebraskana*
Elytra granulate, dull or with slight sheen near base, abdominal sternites metallic green to violet (Figure 10) . . . . . *C. longilabris*

6. (From 1) Head more or less hairy (Figure 4), at least a few hairs on frons, if hairs abraded setigerous punctures (pit formed by hair base) mark the former location of hair . . . . . To 7
Head with only clusters of hair on the anterior inner edge of each eye (Figure 5) . . . . . To 20

7. (From 6) Hair on head, thorax and abdomen decumbent (pressed against body) To 8
Hair more or less erect on at least part of the body (beetles killed in liquid may have matted hair), markings usually well defined . . . . To 11

8. (From 7) Dark elytral markings not sharply defined, legs pale, on sand dunes (Figure 32) . . . . . *C. lepida*
Dark elytral markings more sharply defined, legs dark . . . . . To 9

9. (From 8) Elytral dark markings reduced, mostly pale (Figure 13) . . . . *C. limbata nympha*
Elytral dark markings not greatly reduced, more typical banding pattern . . . . . To 10

10. (From 9) Middle band straight and oblique, not "hooked" at end, pale markings heavy, wide (Figure 12) . . . . . *C. limbata hyperborea*
Middle band sinuous, curved, hooked at end, pale markings not heavy, alkali washes (Figure 30) . . . . . *C. nevadica*

11. (From 7) Marginal line joined or touching humeral lunule (Figure 3) . . . . . To 12

Cicindela formosa, *one of the most common species of tiger beetle to be found in Alberta.*

Photo: Gerald J. Hilchie

Marginal line separated, not touching humeral lunule, often greatly reduced . . . . . To 15

12. (From 11) Humeral lunule "c" shaped . . . . . To 13

Humeral lunule oblique, pale markings wide . . . . . To 14

13. (From 12) Genae (side of head, 'cheek') glabrous (Figure 7), posterior tip of humeral lunule (when present) with slight anterior hook (marginal line may touch apical lunule, Figure 11) . . . . . *C. hirticollis*

Genae setose (if hairs abraded, setigerous punctures mark their former position, Figure 8), marginal line usually separated from apical lunule (Figure 14) . . . . . *C. repanda*

14. (From 12) Length greater than 15mm, humeral lunule line obliterated totally or in part by marginal band (Figures 21 & 22) *C. formosa*

Length less than 15mm, humeral lunule long, spur may almost touch middle band (Figure 23) . . . . . *C. lengi*

15. (From 11) Marginal line greatly reduced, or absent, humeral lunule absent or reduced to spots (Figures 27, 28 & 29) . . . . . To 16

Marginal line present (Figures 18, 19 & 20), obvious spur, humeral lunule present . . . . To 18

16. (From 15) Middle band wide, long, apical end not markedly curved, color green to violet (Figure 28) . . . . . *C. decemnotata*

Elytral markings thin, light, middle band more strongly curved, shorter than width of elytron . . . . . To 17

17. (From 16) Post humeral spot usually absent, middle band widely separated from margin, color green or black (Figure 27) . . . . . *C. purpurea*

Post humeral spot usually present, middle band narrowly separated or touching margin, color red or greenish, middle band transverse, often strongly curved at apical end (Figure 29) . . . . . *C. splendida limbalis*

18. (From 15) Genae glabrous (Figure 7), elytra with greasy appearance, pale markings heavy, on alkali soils and washes (Figure 20) . . . . . *C. fulgida*

Genae with hairs, or setigerous punctures if hairs abraded (Figure 8) . . . . . To 19

19. (From 18) Humeral lunule "c" shaped, scape (basal segment) of antennae with few hairs (Figure 18) . . . . . *C. duodecimguttata*

Humeral lunule oblique, scape of antennae hairy (more than 10 hairs) (Figure 19) . . . . . *C. tranquebarica*

20. (From 7) Elytra not serrulate, not punctate, in Alberta Red/green elytra without pale maculations (Figure 24) . . . . . *C. scutellaris*

Elytra punctate, serrulate, color brown, blue, oilve, maculations typical to reduced . . . . . *C. oregona* . . . . . To 21

21. (From 20) Thoracic plurae (side plates of thorax) blue/purple, elytra brown, green, blue, maculations narrow, pronotum (first thoracic segment) brown (Figure 15) *C. oregona oregona*

Thoracic pleura coppery, eyltra dark brown, maculations narrow (Figure 16) . . . . . *C. oregona guttifera*

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References

Criddle, N. 1907. Habits of some Manitoba tiger beetles (Cicindelidae). The Canadian Entomologist. 39: 105-114.

Criddle, N. 1910. Habits of some Manitoba tiger beetles, No. 2 (Cicindelidae). The Canadian Entomologist. 42: 9-15.

Freitag, R. 1965. A revision of the North American species in the *Cicindela maritima* group with a study of hybridization between *Cicindela duodecimguttata* and *oregona*. Quaestiones Entomologicae. 1: 87-170.

Graves, R.C. 1962. Predation on *Cicindela* by a dragonfly. The Canadian Entomologist. 94: 1231.

Hamilton, C.C. 1925. Studies on the morphology, taxonomy and ecology of the larvae of Holarctic tiger-beetles (family Cicindelidae). No. 2530 Proceedings U.S. National Museum. 65. Art. 17, 1-87, pls. 1-12.

Lavigne, R.J. 1972. Cicindelids as prey of robberflies (Diptera: Asilidae). Cicindela 4(1): 1-7.

Shelford, V.E. 1908. Life history and larval habits of the tiger beetles. The Journal of the Linnaean Society of Zoology. London. pp. 157-184.

Swan, L.A. 1975. Tiger Beetle. Insect World Digest. Jan/Feb. 1975: 1-5.

Wallis, J.B. 1961. The Cicindelidae of Canada. University of Toronto Press, Ontario. 74 pp.

Willis, H.L. 1967. Bionomics and zoogeography of the tiger beetles of saline habitats in the central United States (Coleoptera: Cicindelidae). University of Kansas Science Bulletin. 47(5): 143-313.

Willis, H.L. 1968. Artificial key to the species of *Cicindela* of North America north of Mexico (Coleoptera: Cicindelidae). Journal of the Kansas Entomological Society. 41: 303-317.

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Viewing Wildlife

Status of the Fish and Wildlife Resource in Alberta. Fish and Wildlife Division, Alberta Energy and Natural Resources (ENR Departmental Working Paper No. 2). April 1984. 160 pp.

Special Review by M.T. Myres

This recently-released document is "a working paper issued for purposes of review and response." It begins by stating that under the October 1982 *Fish and Wildlife Policy for Alberta* "the Minister...will periodically make a declaration of...the present resource status", and "the purpose of this document is to provide the basis for the Minister to make that declaration." It is affirmed that "this document will be reviewed and updated periodically", and that "comments are welcome and will aid in revision." The task is fundamental and the purpose noble. The review that follows is designed (1) to acquaint readers with its contents, and to encourage them to make their own responses, and (2) to attempt to evaluate the extent, quality, reliability and usefulness of what has been prepared for the Minister. The document "represents the initial steps" towards transforming the *Fish and Wildlife Policy* into "specific public benefits, goals and objectives which in turn will be addressed through detailed species management plans." The time for naturalists to influence the viewpoint of the planners and to correct errors is now, not later.

Part 1

Part 1 of the document (19 pages) is entitled "Overview" and it consists of four tables, two figures and 4 1/2 pages of text, plus one page of source references for Part 1. The text includes one page devoted to the purposes of the document (summarized above), followed by five short paragraphs, the last of which ends with two specific examples (for pronghorn and trout) of the way in which population, public-use and habitat goals are determined. The key question is "what are the options?", and the sequence suggests to me that the options are perceived as being limited by (1) the extent to which wildlife and fish habitats have already been alienated in Alberta by human activities, and (2) the expense and cost/benefit considerations of any meaningful habitat enhancement (or repair) that might be proposed.

Most emphasis in the "Overview" is devoted to the importance that Albertans place on various forms of wildlife- and fish-related activities (including **viewing**) and on the days and money spent on those activities. Much of the evidence has been derived from *The Importance of Wildlife to Canadians* (Canadian Wildlife Service, 1983), which was reviewed in *Alberta Naturalist* 13(3): 96-97 in September 1983. The Minister should particularly note the following statistics (in Table 3 and Figure 2 of the document now being reviewed): –

(1) In 1980/81, 20% of Albertans together spent $275 million on special trips "to view wildlife", whereas 11% of Albertans spent only $180 million on hunting. Including $300 million also spent by Albertans on fishing, the total **recreation value** of the resource was $755 million that year, compared to a total **economic value** of only $28 million accruing from the food value of native hunting, trapping, commercial fishing and guides and outfitting. The role of fish and wildlife in the tourist industry was not measured separately.

(2) As many as 86.5% of Albertans expressed "interest in participating in one or more non-consumptive wildlife-related activities", compared to 29.7% interested in "one or more consumptive-related activities" (368,000 fished, and apparently 165,000 were licensed hunters in 1980/81).

Undue emphasis is given, in Figure 2, to declarations of interest in consumptive as compared with non-consumptive wildlife-related activities. The scale of the bar graph (bottom right in Fig. 2a) for the former (29.7% of Albertans) has been exaggerated in comparison with the latter (86.5%), who are 3X as numerous, but not 3X as large in the figure (bottom left in Fig. 2a). I am, of course, delighted that the national survey of *The Importance of Wildlife to Canadians* has been given the recognition that it deserves, but the importance of non-consumptive, as compared with consumptive, activities has not received its proper emphasis in the rest of this document.

The report gives little detail about individual waterfowl species such as Pintail. Edgar T. Jones

Part 2

Part 2 of the document ("Species Status". pp. 20-160) is a catalogue. Fish are covered on pages 35-69, mammals on pages 25, 29, 34 and 70-118, birds on pp. 23-24, 26-28, 30-33 and 119-156, and amphibians and reptiles on pp. 157-160. The sequence is oddly different from the taxonomic one, and seems instead to reflect declining economic importance or the *ad hoc* value judgement of an administrator. The number of species given individual status reports are: fish – 16; mammals – about 30; birds – only about 18 (endangered, threatened, and rare species, one duck, the "large Canada goose", upland game and two additional colonially-nesting birds only). Most raptors and the 18 species of herptiles get only 1-4 line statements each. Waterfowl are mostly lumped together. Waterfowl enthusiasts may well ask why so little detail is given about individual species of ducks and geese, on which more information is gathered each year than on almost any other avian resource.

For each fully-treated species, there are brief statements on (i) overview and history, (ii) current supply and use, and (iii) long-range goals; and these goals are subdivided into (a) populations, (b) user, and (c) habitat goals. For most species that are treated independently there is a map, and for many there are small geographical illustrations, extending from 1960-2000 of (i) population, (ii) recreation days (hunting or fishing only), (iii) users (hunters or anglers), and (iv) harvest. The historical data up to 1980 are often estimated, while between 1980-2000 lines are drawn for "goal" and "projected" numbers. Along with gross estimates of Alberta populations, "user" and "habitat" goals tend to be to "encourage greater harvests" and to "maintain and improve habitat." The main line of thinking behind the compilation is hinted at when one comes across the jingoistic (and semi-automatic) statement, pre-determined by the format, that the "current supply" of Whooping Cranes is 143 birds – current supply for what, pray tell? (is it for eating like almost everything else?).

How does the selection of species that get individual treatment in Part 2 match the findings about public attitudes to wildlife demonstrated in Part 1? Commercial and game fish (which are not listed separately), ungulates, carnivores, furbearers, waterfowl and upland game birds receive greater emphasis than all the other species of fish, mammals and birds indigenous to the province. Endangered, threatened or rare species get 12 pages, and raptors and two other colonial water birds get 6 pages. But all the "other fish" (pp. 68-69), "other mammals" (pp. 117-118) and "other birds" (pp. 154-156) are dismissed in only 7 pages! The phrase "current supply is not known for many of these species" is used. This demonstrates how pathetically slim must be the information base on non-game species (the majority of our native species) that the Fish and Wildlife Division has built up.

The casual approach to sources of information is one of the most regrettable features of this status report. Vague, and so useless, references to in-house data sources are frequent, thus frustrating any follow-up to factual information that either an employee of the Fish and Wildlife Division or a member of the public might wish to make. The compilers could have cited a substantial number of published sources, e.g. Stelfox (1971), Weseloh et al. (1977), Gollop (1978), Lang et al. (1978), Markham and Brechtel (1978), Roberts (1982) and Gunson (1983), to list a few from among the hundreds available. Most of the reports on endangered, threatened or rare species pro-

duced by COSEWIC (the Committee on the Status of Endangered Wildlife in Canada) are not cited precisely in the standard way, although it would have been most valuable to have done so (e.g. Wedgwood 1978). The Piping Plover, which has only 1/6th of the number of breeding pairs in Alberta that the threatened Burrowing Owl has (Bell 1978), is also given as threatened in an April 1982 COSEWIC listing, but is just one of the "other birds" in this report.

It would have been most useful if some discussion had been provided on the difficult problem of how to deal with the many species (particularly of birds) that have become part of the fauna of Alberta in recent years and now may breed in small numbers (or from time to time) in limited areas e.g. see Schuler (1977), Bogaert (1979), Wallis and Werschler (1981) and Kuyt (1982), to give a small sampling of examples. None of the species referred to by these authors are noted as being of any significance in this status report. While at the national level COSEWIC determines what is endangered, threatened or rare, in a province that is as large as most European nations we are entitled to our own concept of what is rare and worth preserving in addition. Though Alberta does not have any of Canada's endangered, threatened or rare fish (*Canadian Field-Naturalist* 98: 71-133), there are a number of species that have limited distributions within our provincial borders. Some might easily cease to be members of the fauna of Alberta (Nelson and Paetz, 1982), perhaps especially in the Milk River basin, but they are not listed separately in this document, as the COSEWIC species are. Likewise, Roberts (1982) identified two amphibians and three reptiles that are endangered, threatened or rare in Alberta, but they are not singled out for special treatment in this status report.

Other readers may find points to criticize in the fish and mammals sections. For no obvious reason, however, the status of Alberta's birds is presented in a far less comprehensive fashion than it is for either the fish or the mammals. Yet, there are far more species of birds in Alberta than of fish or mammals, and viewers

Birdwatchers at Beaverhill Lake. The importance of the so-called non-consumptive wildlife uses as compared to consumptive uses, such as hunting, needs to receive proper emphasis in government decisions affecting wildlife and habitat. Photo: Dick Dekker

of birds outnumber viewers of other animals and of plants by a substantial margin throughout western society. The quality of the information provided on the birds is uneven, and the long-range goals are strongly influenced by consumptive potential uses. Although it is said that "viewing use of all ducks...is relatively high" and that a goal is to "increase the number of recreation days...for both viewers and hunters", the graphs for recreation days do not reflect this. It would have been better if the goal had been to increase viewing days as well as hunting days, and to include both in the graphs. I question the validity of considering the Greater Prairie Chicken for re-introduction to Alberta (page 7 of the status report) for it probably never was an aboriginal species (Provincial Museum of Alberta, 1976; Saskatchewan Department of Tourism and Renewable Resources, 1978) and almost certainly could not survive.

In the section on "other birds" species are grouped according to "where they occur in largest numbers" (prairie, parkland, foothill/-mountain and boreal northland species). No further information is provided, and this section shows no advance over what could have been compiled 30 years ago. The only source identified in this unsatisfactory section is *The Birds of Alberta* (Salt and Salt, 1976). The compiler has not even been well-enough read to know of, and steal opinions from, the comprehensive survey by McNicholl (1982). The unpublished evaluations of status that were prepared by members of the Avian Subcommittee for the Alberta Committee on Endangered Species in the late 1970s (*all* Alberta bird species were evaluated), including Myres (1978), could have been drawn upon. So could the book *Alberta Birds 1961-1970* (Sadler and Myres, 1976) and the data collected to date by the Alberta Ornithological Records Committee for rare species and for the projected atlas of the breeding birds of Alberta. I conclude that one or more competent ornithologists should be immediately assigned to bringing the birds section of this status report up to the same standard as the fish and mammal sections at least.

Finally, *A Nature Guide to Alberta* (Provincial Museum, 1980) and *A Bird-Finding Guide to Canada* (Finlay, 1984) identify many of the most favourable localities for indigenous wildlife in Alberta (e.g. Beaverhill Lake or Namaka Lake), and so are useful signposts to what *viewer tourists* put a high value on when they bring their dollars to our province. Lack of custodial care for these sites will depreciate the status of the wildlife of the province of Alberta. It has been clearly demonstrated that what the public most wants is to view and learn about wildlife, more than to hunt or ranch it, and the Fish and Wildlife Division should start to provide high-quality information of this sort.

Since viewing is so important a motive for wildlife-related recreational activities, both among residents and tourists, the urgent need is for an infusion of funding into research on the total fauna, and the habitat requirements of the numerous less well known species. This is implicitly acknowledged on page 117 and 154, where it is stated as a long-range goal that "reporting systems to determine distribution and population trends" should be established "with other agencies and groups" (one thinks wistfully of the Provincial Museum, as well as the Federation of Alberta Naturalists). The importance of non-game species to bird-watchers and the numerical importance of bird-watchers themselves, has finally to be recognized. Has the Minister the courage to recognize the obvious conclusion from the newly available facts revealed, both by the attitude and economic studies, about what Albertans want and spend money upon?

This document may well be a useful gathering together of "in-house" population estimates, and hunting, fishing and trapping statistics, but as a review of Alberta's vertebrate fauna it is not yet a substitute for published reports. The "data sources" sections at the end of each species status report are wholly unsatisfactory (or indicative of much data that needs to be published) since they refer vaguely to surveys, records or estimates of unstated quality or comprehensiveness.

Conclusion

There is, apparently, a gigantic conceptual stumbling block preventing the public interest in non-game species (a majority of the vertebrate fauna) from being translated into appropriate management programs. Traditional population management through bag limits, stock controls and food supplements on winter ranges, provision of artificial nesting sites, etc. are largely inapplicable to shorebirds, passerine birds and small mammals. What these spe-

cies do require, however, is the very type of unspoiled landscape that the public values highly as wilderness areas and parks. The rarer or more localized species require sanctuaries specifically designated for their individual preservation. These requirements differ somewhat from the ones that the provincial government has been used to providing. The political resistance to declaring wild lands as wilderness areas, ecological reserves or sanctuaries means that the goal of this document, to increase recreational use of the wildlife resource, by viewers in particular, is likely to be frustrated by the policy that "facilities required to accommodate public use will not be developed by the Division except where such facilities cannot be accommodated by other agencies" (*Proposed Revisions of the Wildlife Act,* 1983). Yet, it is just such lands that the public will need access to if the 86% of them who want to view wildlife are to be satisfied, since the habitats of wildlife are wild lands. Since the balancing act of harvesting the species is not involved in wildlife viewing, programs for non-game species need consist of little more than acquiring or designating lands and removing them from commercial exploitation that is harmful to the wildlife within them. Funds that would be available for manipulating game species are, when reserving wild lands, instead required primarily for land purchases, compensation, and habitat maintenance with a minimum of interference. This is so different from the traditional concept of consumptive game management that fish and wildlife agencies have not so far often dared to follow the logic of their own attitude surveys. A Minister, necessarily responsive to public opinion, however, and perhaps less entrained to traditional wildlife management techniques, might conceivably have less difficulty in adapting to the new imperatives if properly briefed. Ecological reserves and sanctuaries are needed for wildlife in Alberta, and the Minister responsible for wildlife should be pressing his colleagues for their urgent creation. The *Status of the Fish and Wildlife Resource* document is far from being an adequate inventory at present. A considerable reformation of visions in government will be needed if the demonstrated wishes of Albertans are really to be satisfied.

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References Cited

Bell, F.H., 1978. The Piping Plover (*Charadrius melodus* Ord) in Canada: a status report. MS. 39 pp.

Bogaert, L. 1979. Black-necked Stilts nesting in Alberta. Alberta Naturalist 9: 86-89.

Canadian Wildlife Service. 1983. The Importance of Wildlife to Canadians: highlights of the 1981 National Survey. Minister of Supply and Services, Ottawa, Ontario. 40 pp.
Finlay, J.C. (Ed.). 1984. A Bird-Finding Guide to Canada. Hurtig, Edmonton. 388 pp.

Fish and Wildlife Division. 1982. Fish and Wildlife Policy for Alberta. 24 pp. Edmonton

Fish and Wildlife Division. 1983. Proposed Revision of the Wildlife Act (brochure). Edmonton.

Gollop, J.B. 1978. Changes in songbird populations since the mid-1940s in the prairie provinces. In Davies, W.A. Nature and Change on the Canadian Plains. Canadian Plains Proceedings 6:78-103.

Gunson, J.R. 1983. Status and management of wolves in Alberta. *In* Carbyn, L.N. (Ed.). Wolves in Canada and Alaska: their status, biology and management. Canadian Wildlife Service Report Series 45: 25-29.

Kuyt, E. 1982. Semipalmated Plover breeding in Alberta. Alberta Naturalist 12: 6-8.

Lang, V., D.V. Weseloh and N.G. Kondla. 1978. The Alberta Burrowing Owl Inquiry, 1972-73. Alberta Naturalist 8: 3-8.

Markham, B. and S. Brechtel. 1978. Status and management of three colonial waterbird species in Alberta. Proceedings, 1978 Conference of the Colonial Waterbird Group: 55-64.

McNicholl, M.K. 1982. Alberta bird species at risk. Alberta Naturalist 12: 55-79.

Myres, M.T. 1978. Status Designations for Alberta's Birds (Preliminary). Prepared for Avian Sub-committee, Alberta Committee on Rare and Endangered Species. MS. 23 pp.

Nelson, J.S. and M.J. Paetz. 1982. Alberta fish species. Alberta Naturalist 12: 52-53.

Provincial Museum of Alberta. 1980. A Nature Guide to Alberta. Hurtig, Edmonton. 368 pp.

Roberts, W.E. 1982. Threatened or endangered native species of amphibians and reptiles of Alberta. Alberta Naturalist 12: 54.

Sadler, T.S. and M.T. Myres. 1976. Alberta birds 1961-1970, with particular reference to migration. Prov. Museum Alberta Natur. Hist. Sect., Occ. Paper No. 1. Edmonton. 314 pp.

Salt, W.R. and J.R. Salt. 1976. The Birds of Alberta. Hurtig, Edmonton. 498 pp.

Saskatchewan Department of Tourism and Renewable Resources. 1978. Status Report on Prairie Chicken, *Tympanuchus cupido pinnatus* in Canada. Committee on the Status of Endangered Wildlife in Canada. 18 pp.

Schuler, H.C.E. 1977. The White-faced Ibis in southern Alberta. Alberta Naturalist 7: 146-148.

Stelfox, J.G. 1971. Bighorn sheep in the Canadian Rockies: a history 1800-1970. Canadian Field-Naturalist 85: 101-122.

Wallis, C.A. and C.R. Wershler. 1981. Status and breeding of Mountain Plovers (*Charadrius montanus*) in Canada. Canadian Field-Naturalist 95: 133-136.

Wedgwood, J.A. 1978. The status of the Burrowing Owl in Canada. Canadian Wildlife Service. 84 pp.

Weseloh, D.V., S. Brechtel and R.D. Burns. 1977. Recent population changes in Double-crested Cormorants, and California and Ring-billed Gulls in Alberta, with a note on White Pelicans. Proceedings, 1977 Conference of the Colonial Waterbird Group: 10-18.

NATURALISTS BOOKSHELF

A Bird-Finding Guide to Canada

Edited by J. C. Finlay; illustrations by Terry Thormin. Hurtig Publishers Ltd., Edmonton, 387 pp., 40 b/w drawings, 12 maps, $18.95 paper, $27.95 cloth.

Buried amongst all the press releases, exchange publications, impact assessments to be reviewed and just general junk mail that we receive at the F.A.N. mail box are delightful requests for information from soon-to-be visiting naturalists. Almost without exception, these are birders who are going to such-and-such a place, want to see some special bird, or else they seek the location of "hot spots" and a route between these good birding locations, as well as a brief list of what they might see. At long last, here is a book that can be used as a reference to respond to wandering birders, and a guide to recommend they get before they leave home.

When this book arrived, it seemed appropriate to get a dedicated lister to do the review; however, many of those listers that I know were also contributors. In preparing this book, Cam Finlay solicited contributions from noted birdwatchers throughout Canada, which has ensured that each of the bird-finding spots described has the benefit of extensive, personal experience. The true review will come when birders across North America visit these hot spots and assess the descriptions on the basis of their experiences.

"A Bird-finding Guide..." is generally well-organized. The introductory section entitled "The Plan" concisely summarizes the approach taken for the guide. Areas selected were 'the best birding areas, most national and many provincial parks, and nearly all major urban centres.' The basic objective is to describe birding spots and the associated birds for beginners, average naturalists, and keen listers. Particularly common birds (e.g. American Robin) are seldom mentioned. A few helpful suggestions for novice birders are provided and a code for outdoor use that should be reviewed by all. The bulk of the text is comprised of province-by-province sections, from British Columbia to Newfoundland, followed by sections on the Yukon and Northwest Territories. A very valuable appendix is the complete checklist for each province and territory, featuring breeding birds, migrants and vagrants or rare birds. Perhaps equally valuable is the second appendix listing recent name changes affecting Canadian birds; this latter list will be particularly useful for long-time bird students who had ingrained the previous names and now must be reacquainted with transformed friends.

Each provincial/territorial account begins with a list of each area described, and an outline map showing approximate locations of hot spots and birding loops. These maps are very simple and must be used in conjunction with good road maps. A provincial/territorial summary follows that highlights special birds to be seen in the region, some basic geographical notes, the major habitats with their characteristic birds, a capsule account of seasonal bird occurrence, suggestions to birders arriving in each region for quick trips and extended tours, and sources for more information, including rare bird alert phone numbers and the addresses of naturalist groups. Each special area shown on the maps is then described in detail. General significance of each area with respect to birds is expressed; usually followed by a summary of other natural history features including vegetation, terrain, mammals, etc. Instructions are given for access via personal vehicle, on foot, or using public transportation, with any situations of rough roads or seasonal problems being spelled out. Also, in most cases a further source for information is listed, often including a phone number or an address for mail requests. Birding features are discussed in varying degrees of detail, depending partly on the bird diversity and the seasonal changes in bird occurrence, and partly on the different writing styles of contributors. Several accounts practically guarantee the observer will find such-and-such a species at the time of year and site described!!

Accompanying the text are 40 line drawings of different bird species by Terry Thormin. These are well placed and add life to the book; I have always been impressed with Terry's art and

these are fine examples of his illustrative talents.

Overall, the book is reasonably well edited. The task of checking bird species names and making sure that all are appropriately capitalized and corrected to the new names must have been horrendous. I noted some errors that surprised me in the section on Alberta, however. In the provincial summary, it is stated that a small piece of 'arctic tundra' occurs in the northeast corner of the province. This should have been Canadian Shield as there is no tundra occurring in the province except in the alpine zone. The names of two well-known Albertan birders are consistently misspelled — Dick Dekker and K. J. Van Tighem. Also, under the Beaverhill Lake account, mention is made of Herring Gull colonies supposedly occurring on the lake, when it should have been Ring-billed Gulls. A glaring omission in the Alberta account is the lack of reference to "A Nature Guide to Alberta" as this would alert visiting birders to a more extensive list of interesting birding spots.

I detected only a few errors in the remaining text, but I do not want to harp on minor production flaws. It is unfortunate, however, that for the paper version the design of the front cover ensures that the tiny, superb photographs next to the spine are creased as soon as one opens the book.

I look forward to being able to use "A Bird-Finding Guide to Canada" when next I travel. I am sure that other birders, at all levels of expertise, will find something of value in this guide for them.

David M. Ealey

The Northern Naturalist

By E. OTTO HOHN, 1983, 173 pp., $12.50 paper, Lone Pine Publishing, Edmonton.

Otto Hohn has written a collection of reminiscences about the mammals and birds he loves (plus a few herptiles) which live in or migrate through the parts of Canada that are close to his heart. He describes them rather randomly, with a salamander next to a snipe and a sapsucker next to a chorus frog and a skunk popped in between a great grey owl and a great horned owl.

Many tidbits of information, such as the strange promiscuous behaviour of female sandpipers and phalaropes, and the observation that male chorus frogs will try to mate with 'anything the right size that comes along' are tossed up for the reader's delectation, but much of the description of creatures will be familiar to the Alberta naturalist. However, the title is "The Northern Naturalist" not 'Northern Natural History', and indeed I think one perceives more of the author than of the subjects, on the whole — glimpses of the author braving the dark unknown of the cellar to discover the true nature of a dragon there, hopefully watching the comings and goings of bluebirds in his nest boxes, in pursuit of duck 'ardently though with only modest success' or struggling through muskeg in a downpour, dressed unsuitably in a pair of shorts.

Bobcat. One of the 33 photographs, mostly by the author, that illustrate "The Northern Naturalist".

I think the information he relays from various sources could have been improved by references in the text to the authors concerned, and a full listing of these at the end; some are mentioned in the list of sources and many are not, or not with the appropriate book. This matter appears to me to be of greater importance than the presence of an index, which in any case I found inaccurate the first time I had occasion to use it, the frog being incorrectly indexed.

However, I do hope that readers will obtain some of the enjoyment from reading this book that Otto Hohn obviously obtains from observing his many wild acquaintances in the bush. It is tastefully and modestly produced, and has a particularly attractive cover.

Lois Fenna

Recent Publications on the Natural History of Alberta

Compiled by David M. Ealey and Martin K. McNicholl

Natural History of Alberta:

Heath, R., G.R.A. Ebel, and M. Cox. 1984. Beaverhill Lake gazeteer. Edmonton Bird Club Occas. Paper No.2. 12 pp.

Natural History Observations:

Osborne, C. 1984. Other highlights. Calgary Field Nat. Newsletter 5(8): 2. – mammals and butterfly.

Geology:

Ellwood, B.B. and S.G. Pemberton. 1984. Some magnetic properties of Athabasca Oil Sand samples, Alberta, Canada. Can. J. Earth Sci. 21(3): 278-283.

Soils:

Berg, N.W. and S. Pawluk. 1984. Soil mesofaunal studies under different vegetative regimes in north central Alberta. Can. J. Soil Sci. 64(2): 209-224.

Karlin, E.F. and L.C. Bliss. 1984. Variation in substrate chemistry along microtopographical and water-chemistry gradients in peatlands. Can. J. Botany 62(1): 142-153. – in central Alberta.

Water:

Prepas, E.E. and J. Vickery. 1984. Contribution of particulate phosphorous (x250 μm) to the total phosphorus pool in lake water. Can. J. Fish. and Aq. Sci. 41(2): 351-363.

Riley, E.T. and E.E. Prepas. 1984. Role of internal phosphorus loading in two shallow, productive lakes in Alberta, Canada. Can. J. Fish. and Ag. Sci. 41(b): 845-855.

Singh, T. and Y.P. Kalra. 1984. Predicting solute yields in the natural waters of a subalpine system in Alberta, Canada. Arctic and Alpine Research 16(2): 217-224.

Paleontology:

Mamet, B.L. and S.J. Nelson. 1984. Stratigraphic position of Carboniferous *Macgowanella* and *Sinopora ? pascuali*, Canadian Cordillera. Can. J. Earth Sci. 21(4): 500-501.

Taylor, D.R. and R.G. Walker. 1984. Depositional environments and paleogeography in the Albian Moosebar Formation and adjacent Gladstone and Beaver Mines formations, Alberta. Can. J. Earth Sci. 21(6): 698-714.

Wilson, M.C. and L.V. Hills. 1984. Holocene white-tailed deer (*Odocoileus virginianus*) from the foothills northwest of Calgary, Alberta, Canada. Can. J. Earth Sci. 21(3): 365-370.

Non-Vascular Plants:

Coxson, D.S. and K.A. Kershaw. 1984. Low-temperature acclimation of net photosynthesis in crustaceous lichen *Caloplaca trachyphylla*. Can. J. Botany 62(1): 86-95. – near Lethbridge.

Danielson, R.M. 1984. Ectomycorrhizal associations in jack pine stands in northeastern Alberta. Can. J. Bot. 62(5): 932-939.

Redhead, S. 1984. *Arrhenia* and *Rimbachia*, expanded generic concepts, and a reevaluation of *Leptoglossum* with emphasis on muscicolous North American taxa. Can. J. Botany 62: 865-892.

Vascular Plants:

Bernshaw, E., and N. Bernshaw. 1984. Cacti in Canada. Nature Canada 13(3): 22-27.

Hallworth, B. 1984. Botanical highlights. Calgary Field Nat. 5(8): 2 and 5(9): 2.

Holloway, R.G. 1984. Analysis of surface pollen from Alberta, Canada, by polar ordination. Northwest Science 58(1): 18-28.

Lieffers, V.J. 1984. Emergent plant communities of oxbow lakes in north-eastern Alberta: salinity, water-level fluctuation, and succession. Can. J. Botany 62(2): 310-316.

Trees:

Strong, W.L. and G.H. LaRoi. 1983. Root-system morphology of common boreal forest trees in Alberta, Canada. Can. J. Earth Research 13(6): 1164-1173.

Invertebrates:

Borkent, A. 1984. The systematics and phylogeny of the **Stenochironomous** complex (*Xestochironomous, Harrisius,* and *Stenochironomous*) (Diptera: Chironomidae). Mem. Ent. Soc. Canada No. 128. 269 pp.

Davies, R.W. 1984. Sanguivory in leeches and its effects on growth, survivorship, and reproduction of *Theromyzon rude*. Can. J. Zool. 62: 589-593.

Griffiths, G.C.D. 1982. Flies of the Nearctic region. Vol. VIII, Part 2, Anthomyiidae. Number 1. 160 pp. E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart. – same title...
Number 2. 1983. 128 pp.
Number 3. 1984. 108 pp.

Mason, G.F. 1984. Sex chromosome polymorphism in the *Simulium tuberosum* complex (Lundström) (Diptera: Simuliidae). Can. J. Zool. 62: 647-658.

Salkeld, E.H. 1984. A catalogue of the eggs of some Canadian Noctuidae (Lepidoptera). Mem. Ent. Soc. Canada No. 127. 167 pp.

Amphibians and Reptiles:

Powell, G.L. and A.P. Russell. 1984. The diet of the eastern short-horned lizard (*Phrynosoma douglassi brevirostre*) in Alberta and its relationship to sexual size dimorphism. Can. J. Zool 62(3): 428-440.

Birds:

Anonymous. 1984. Hawk reproduction researched. Our Legacy (R.P.W. Foundation) 3(4). June 1984.

Archibald, G.W. 1983. Status of Whooping Crane conservation efforts. Bird Conservation 1: 117-122.

Bennett, G. 1984. Great Canadian round-up – spring brand. Birdfinding in Canada. 4(4): 9-14.

Bock, C.E. 1984. Geographical correlates of abundance vs. rarity in some North American winter landbirds. Auk 101(2): 266-273.

Brechtel, S.H. 1983. The reproductive ecology of Double-crested Cormorants in southern Alberta. M.Sc. thesis, Univ. Alberta, Edmonton.

Cade, T.J. 1983. Peregrine recovery efforts. Bird Conservation 1: 115-117.

Collister, D. and D. Elphinstone. 1983. August to November 1983 bird records, Calgary Field Nat. Soc., Calgary. 29 pp.

Collister, D. and D. Elphinstone. 1984. December, 1983 to February, 1984. Bird records for the Calgary area. Calgary Field Nat. Soc., Calgary. 10 pp.

Edgell, M.C.R. 1984. Trans-hemisphere movements of Holarctic Anatidae: The Eurasian Wigeon (*Anas penelope* L.) in North America. J. of Biogeogr. 11: 27-39.

Elphinstone, D. 1984. Alberta bird name changes. Pica 4(3): 12-13.

Erskine, A.J. 1984. A preliminary catalogue of bird census plot studies in Canada, part 5. Can. Wildl. Serv. Progress Notes No. 144. 34 pp.

Finlay, J.C. (Ed.). 1984. A bird-finding guide to Canada. Hurtig, Edmonton. 387 pp.

Gerrard, J.M. 1983. A review of the current status of Bald Eagles in North America. pp. 5-21 *in* D.M. Bird (Ed.). Biology and management of Bald Eagles and Ospreys. Macdonald Raptor Res. Centre of McGill Univ., Montreal and Raptor Research Found.

Höhn, E.O. 1984. Willow ptarmigan in the boreal forest of the prairie provinces. Blue Jay 42(2): 83-88.

Houston, C.S. and P.W. Brown. 1983. Recoveries of Saskatchewan-banded White-winged Scoters, *Melanitta fusca.* Canadian Field Naturalist 97(4): 454-455.

Hyslop, C. and A. Demers. 1984. Annual report to banders – summary of bird banding in Canada in 1981. Can. Wildl. Serv. Progress Notes No. 145. 5 pp.

McGillivray, W.B. 1984. Nestling feeding rates and body size of adult House Sparrows. Can. J. Zool. 62(3): 381-385.

McTavish, A. 1984. Results of some western birding trips. Birdfinding in Canada 4(3): 16.

Park, J.L. 1983. Birding Riverside Golf Course to Gold Bar Park. Birding Around Edmonton Ser. No. 11. Edmonton Bird Club, Edmonton. 8 pp.

Parsons, W.B. 1984. Persistent barn swallows at Sylvan Lake. Blue Jay 42(2): 18.

Sitwell, F. 1984. Birding the sloughs near Beaumont. Birding Around Edmonton Ser. No. 12. Edmonton Bird Club, Edmonton. 6 pp.

Stiles, D. 1984. Calgary area bluebird trails. Blue Jay 42(2): 93-98.

Stiles, D. 1984. 1983 Calgary area bluebird trail results. Pica 5(1): 14-25.

Swenson, J.E. and R.L. Eng. 1984. Autumn weights of plains Sharp-tailed Grouse in Montana. Prairie Nat. 16: 49-54. – including detailed comparison with Alberta data.

Mammals

Anonymous. 1984. Grizzlies habits analyzed. Our Legacy (R.P.W. Foundation) 3(4). June 1984.

Barrett, M.W. 1984. Movements, habitat use, and predation on pronghorn fawns in Alberta. J. Wildl. Manage. 48(2): 542-550.

Festa-Bianchet, M. and W.J. King. 1984. Behavior and dispersal of yearling Columbian ground squirrels. Can. J. Zool. 62(2): 161-167.

Michener, G.R. 1984. Copulatory plugs in Richardson's ground squirrels. Can. J. Zool. 62(2): 267-270.

Parks and Natural Areas:

Anonymous. 1984. New nature viewpoint. Nature Canada 13(3): 34-35. – Beaverhill Lake.

Jones, K. 1984. Carburn Park (An update on proposed development). Pica 5(1): 8-11.

Development/Environmental Problems:

O'Shea, K.E. 1984. Alberta forest service response to the current mountain pine beetle infestation. Pica 5(1): 26-32.

Wildlife Management:

Sen, A.R. 1984. Hunter movement and activity related to waterfowl harvest in Canada. J. Wildl. Manage. 48(2): 591-595.

Low-Bush Cranberry (Viburnum edule) *is a common understory shrub in the forests of Alberta.*

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